

VOL. XL. No. 6

JUNE 1955

MECCANO

MAGAZINE



LOOKING TO THE DIESEL AGE

1/-

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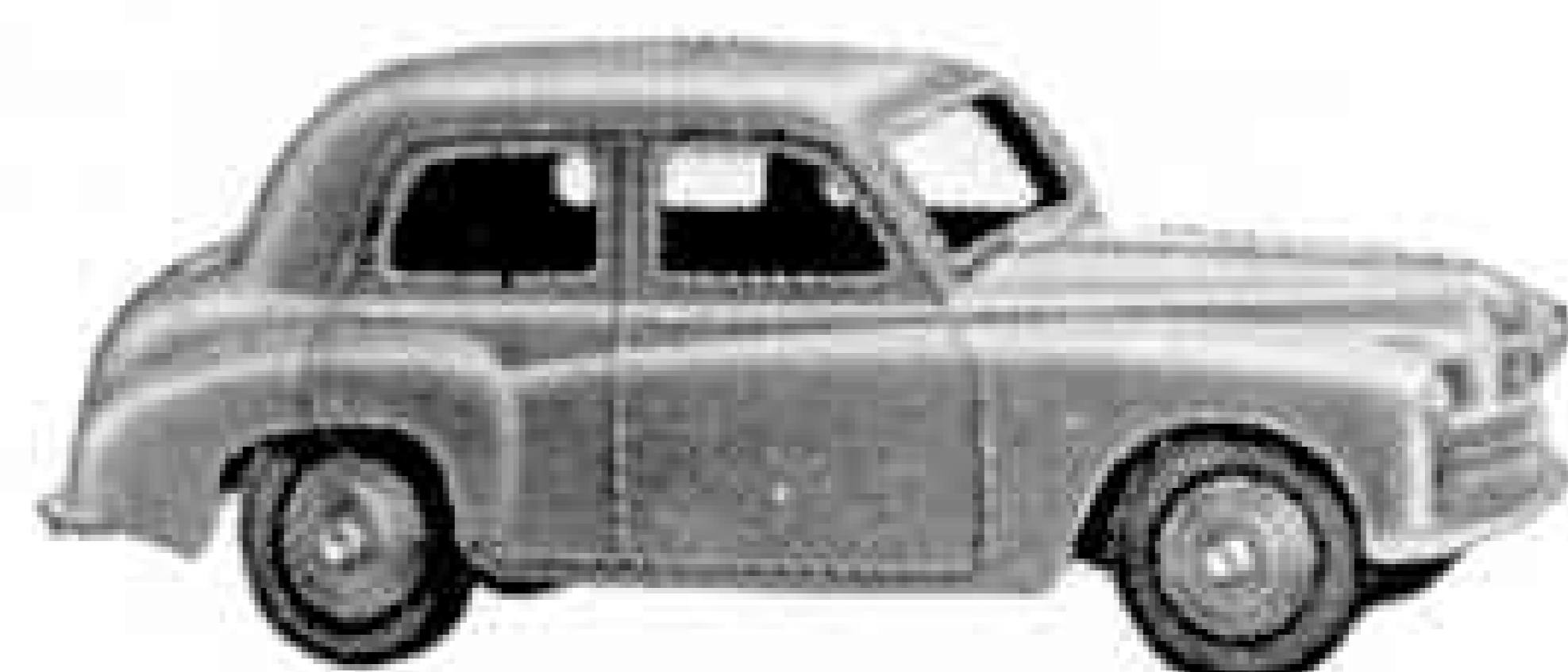
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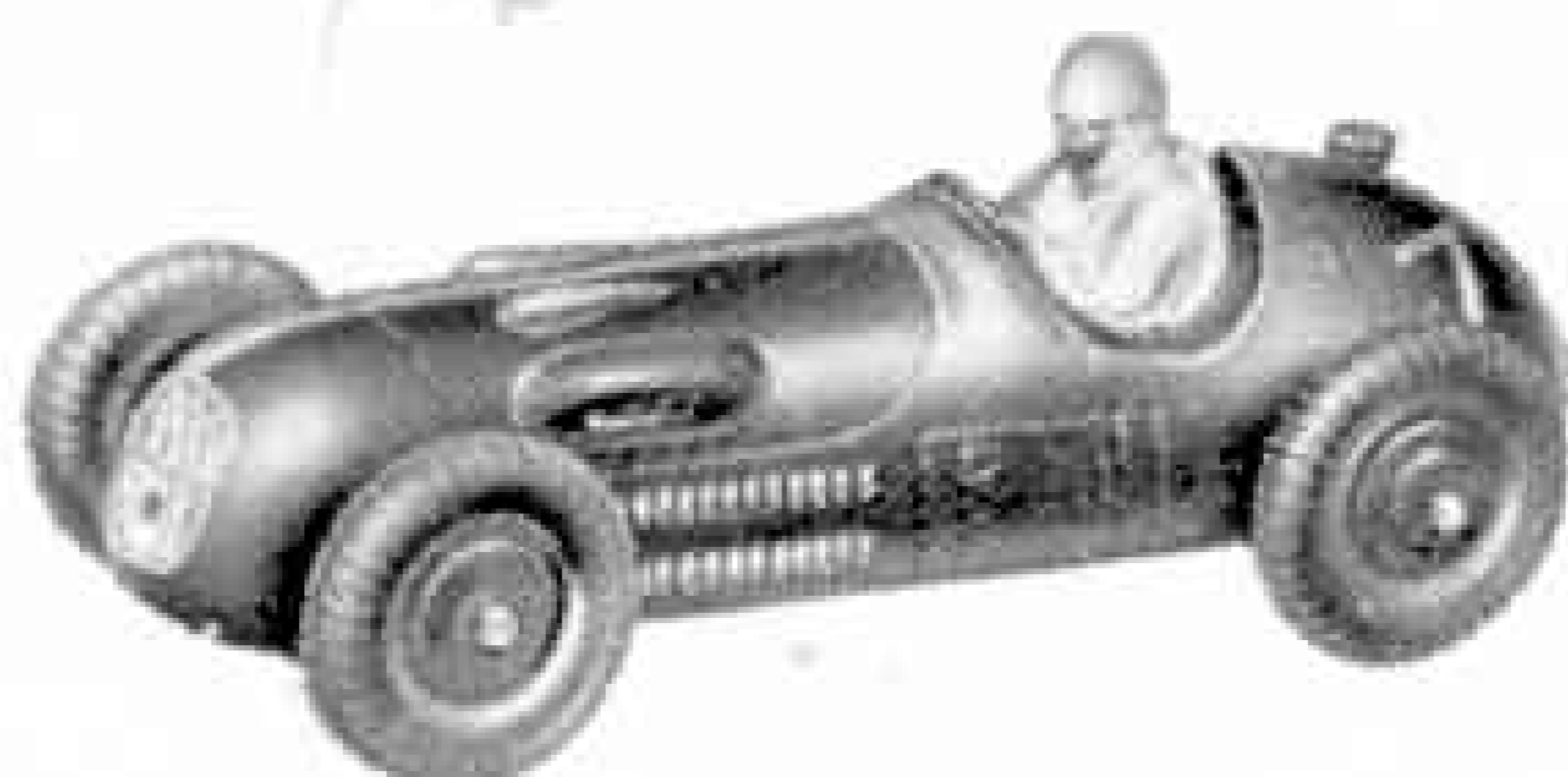
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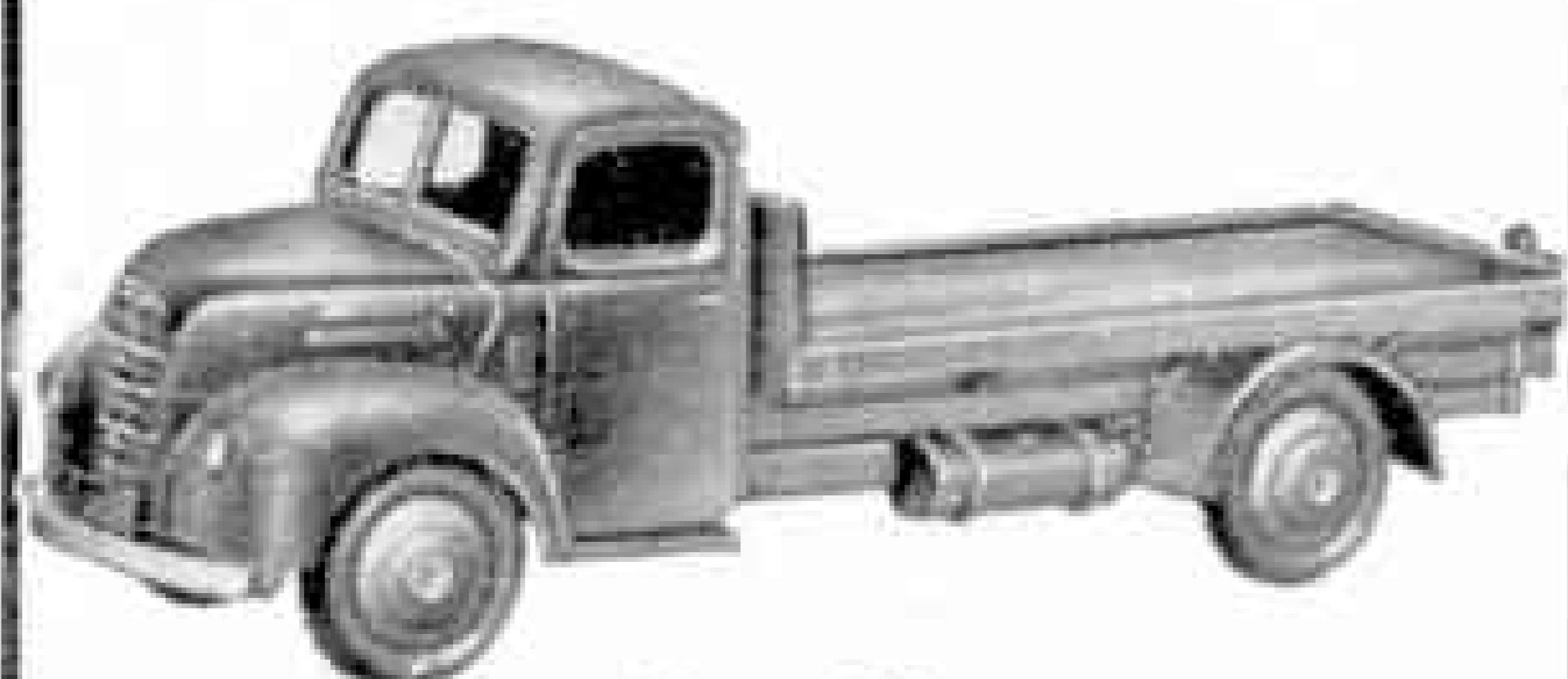
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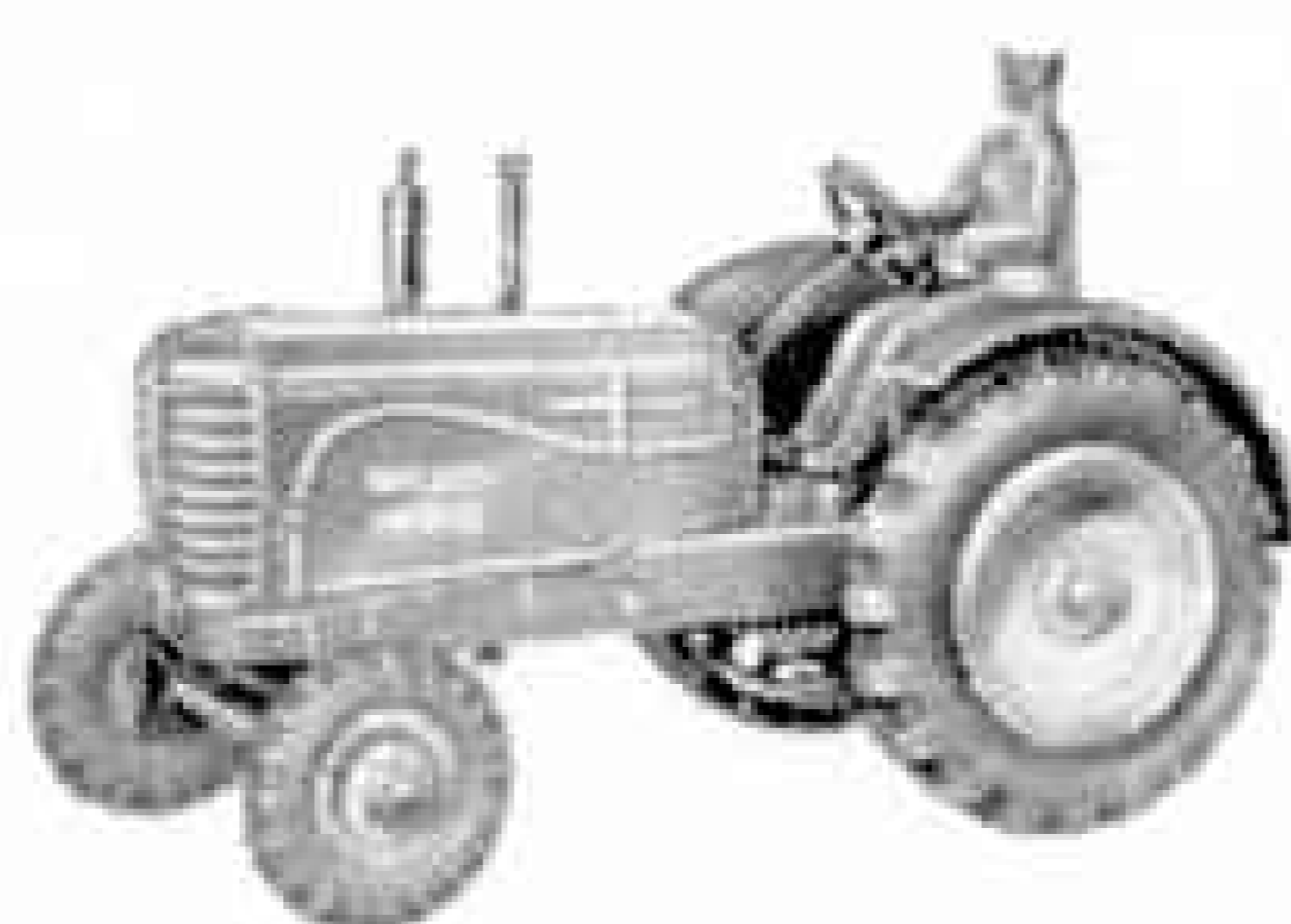
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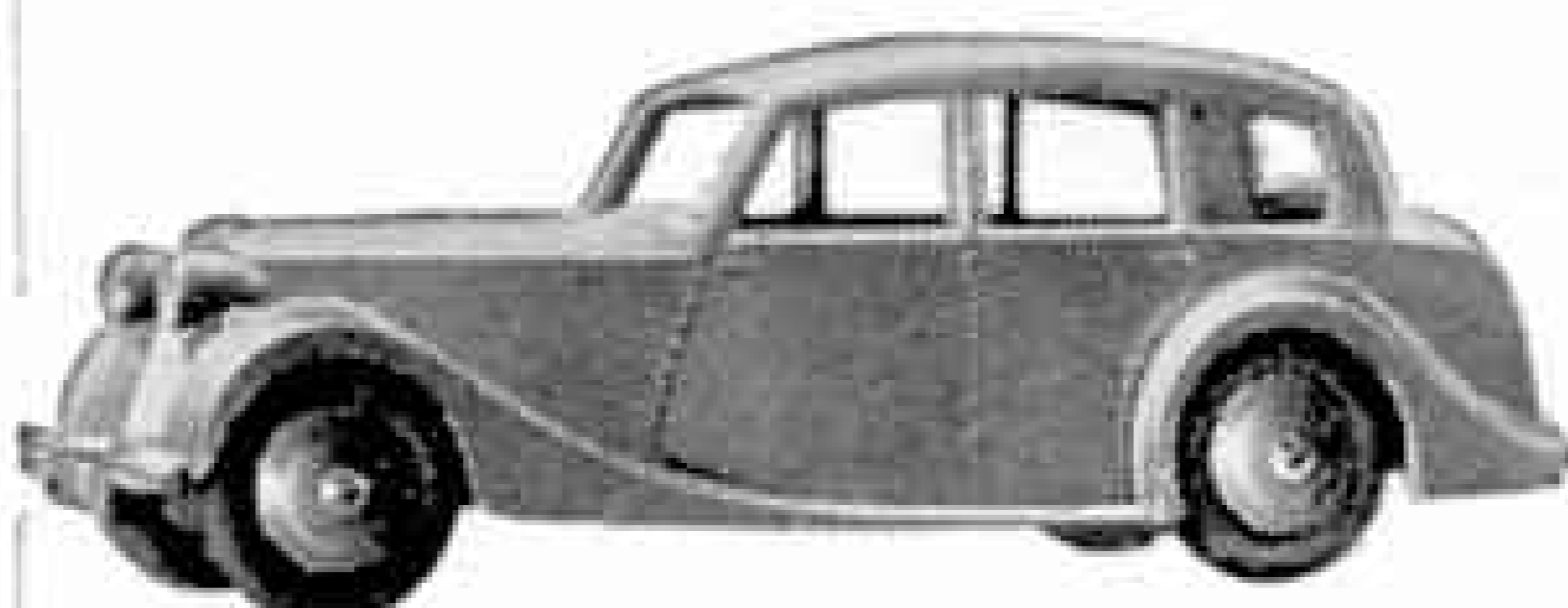
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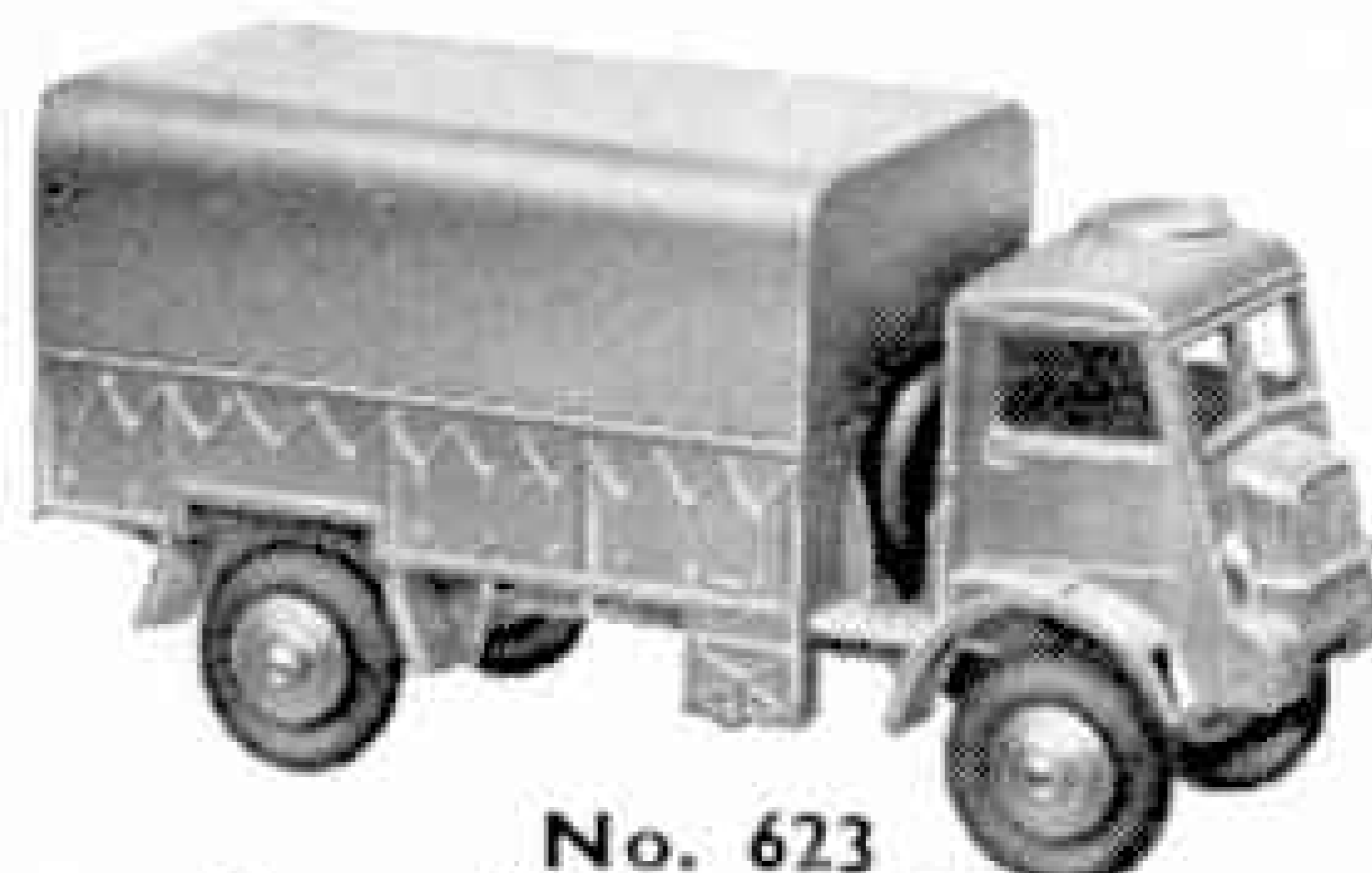
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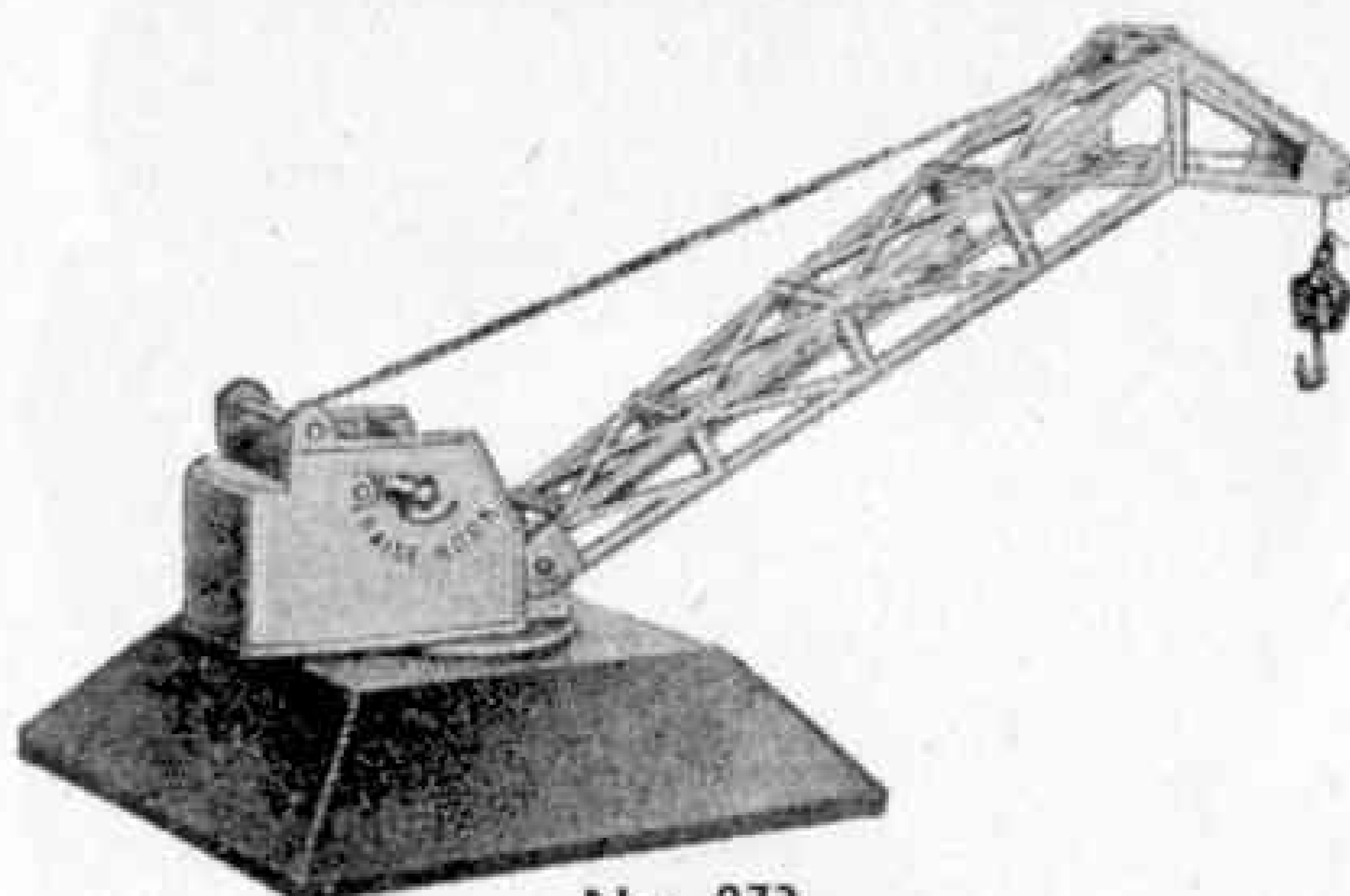
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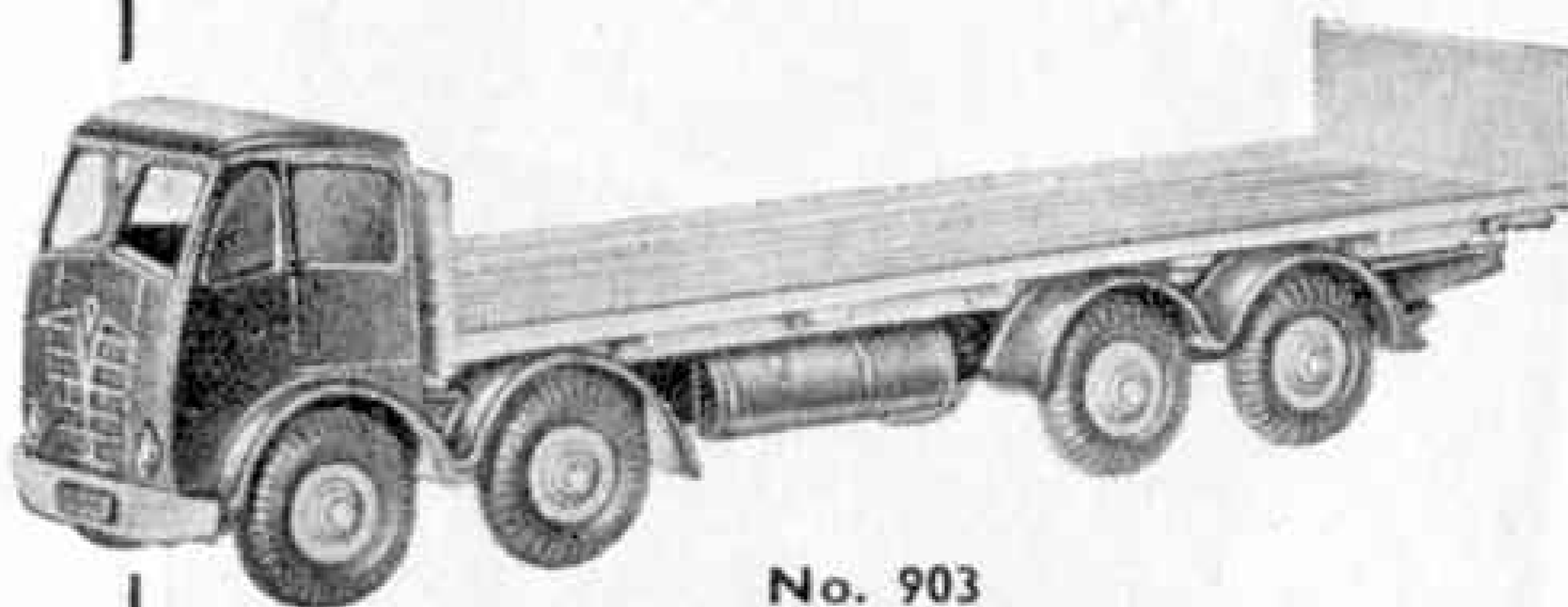
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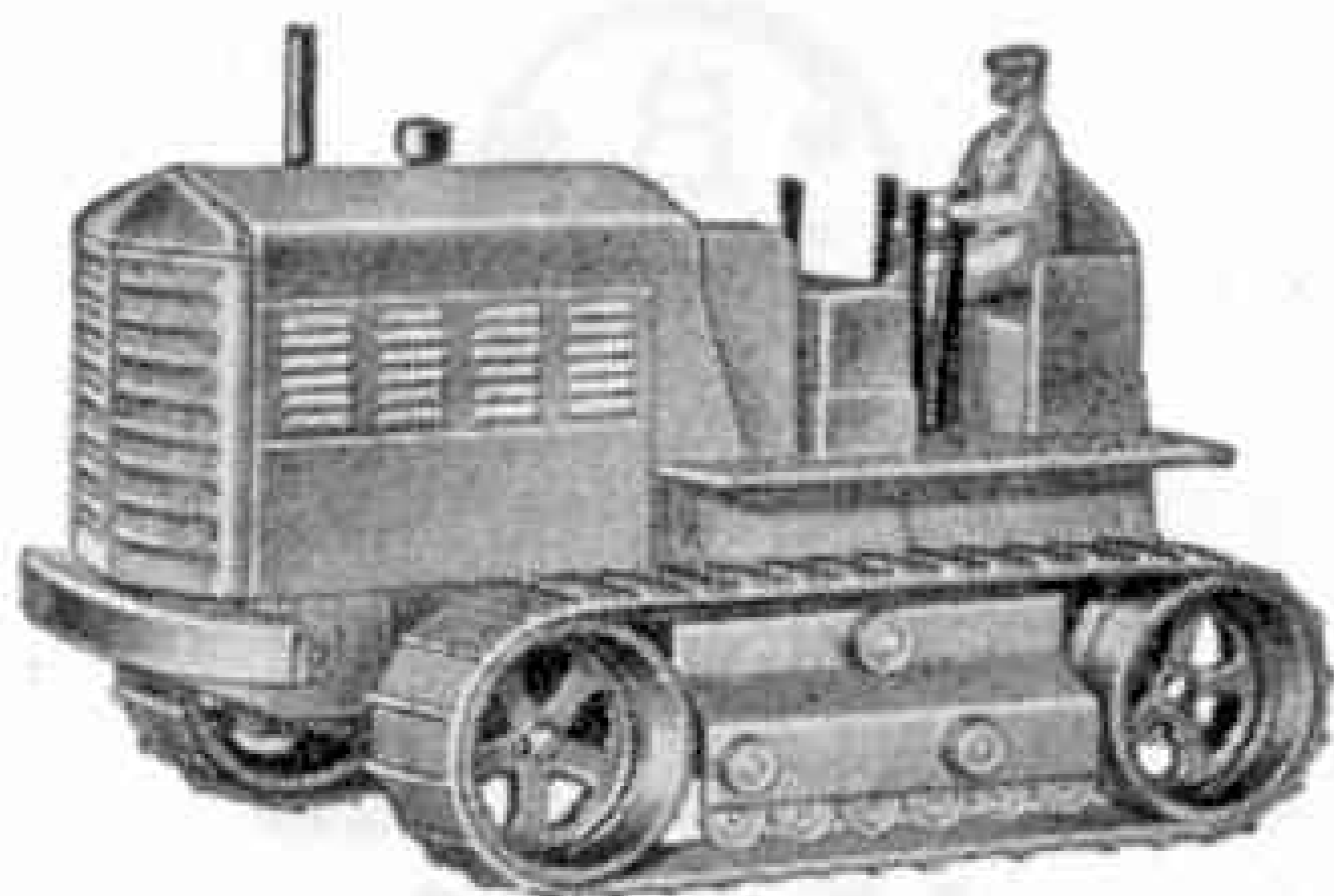
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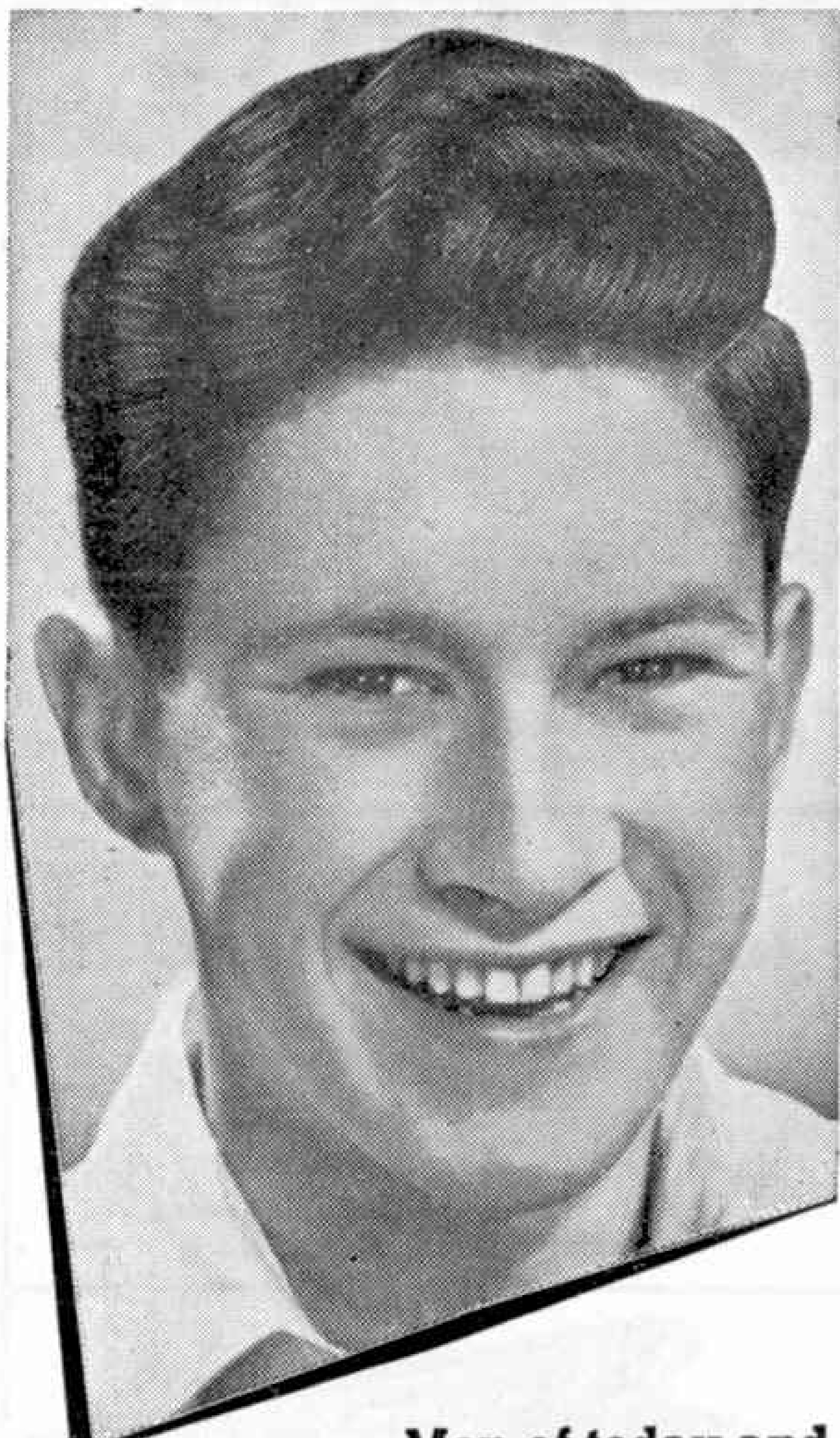
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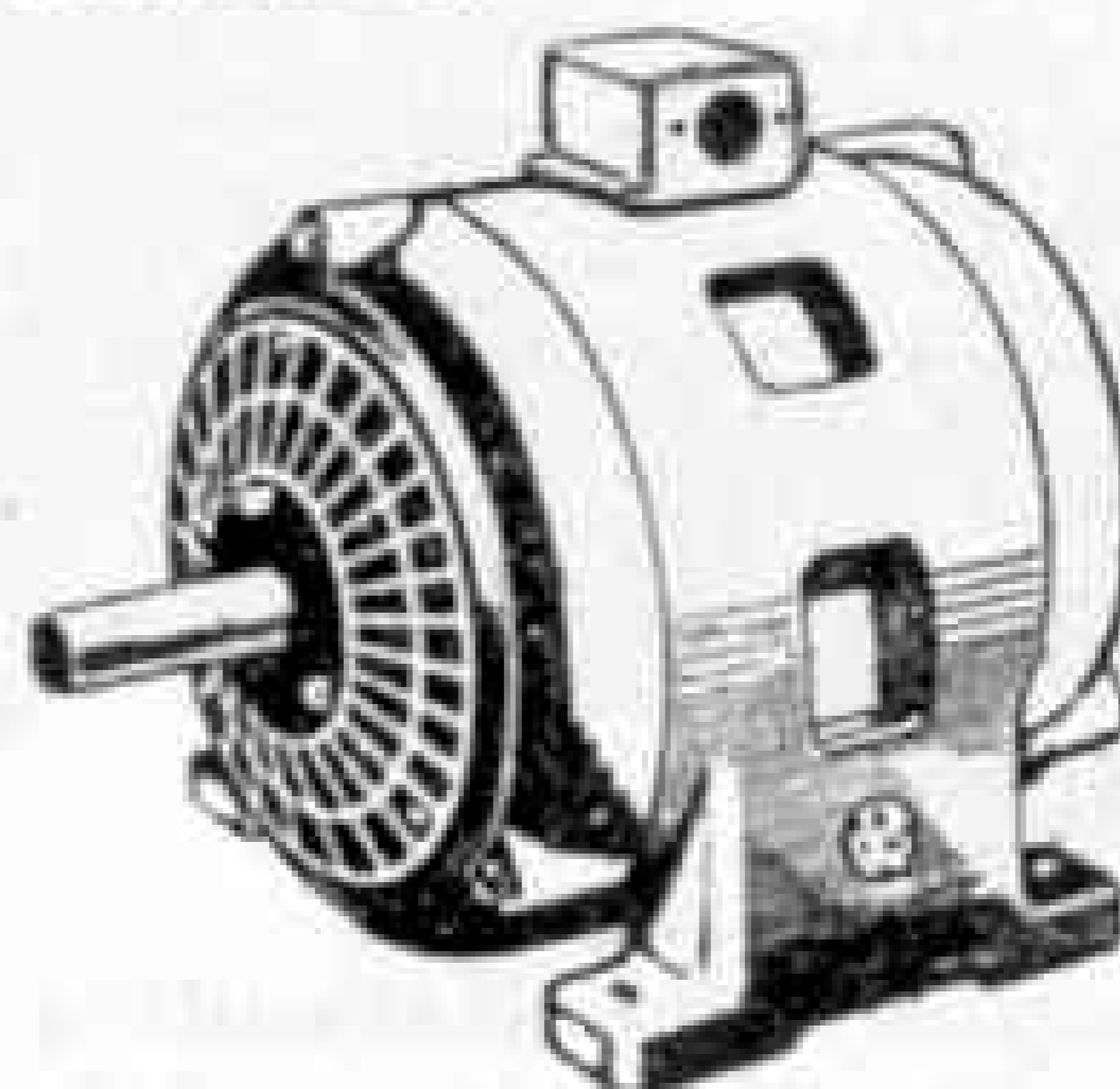


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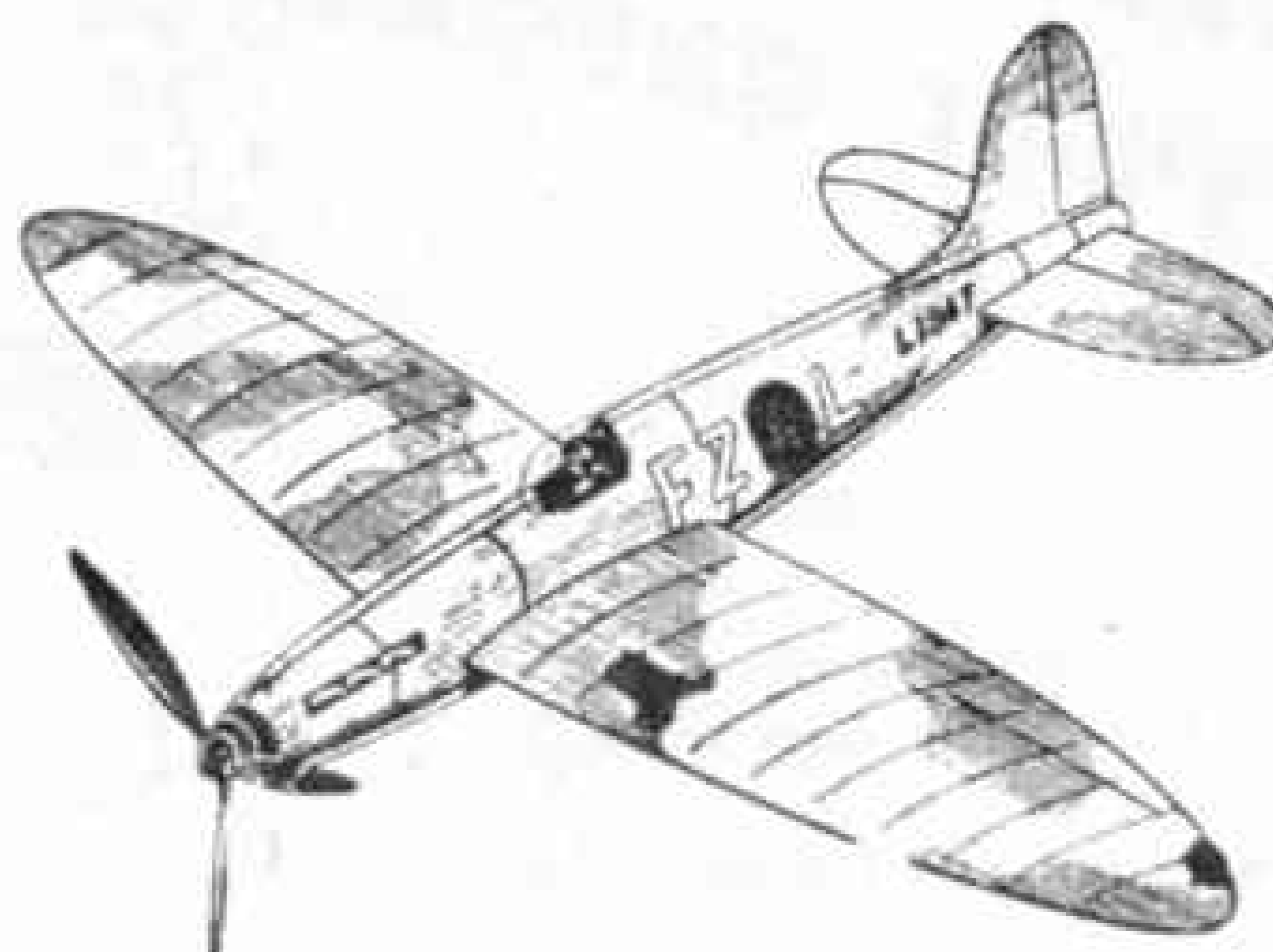
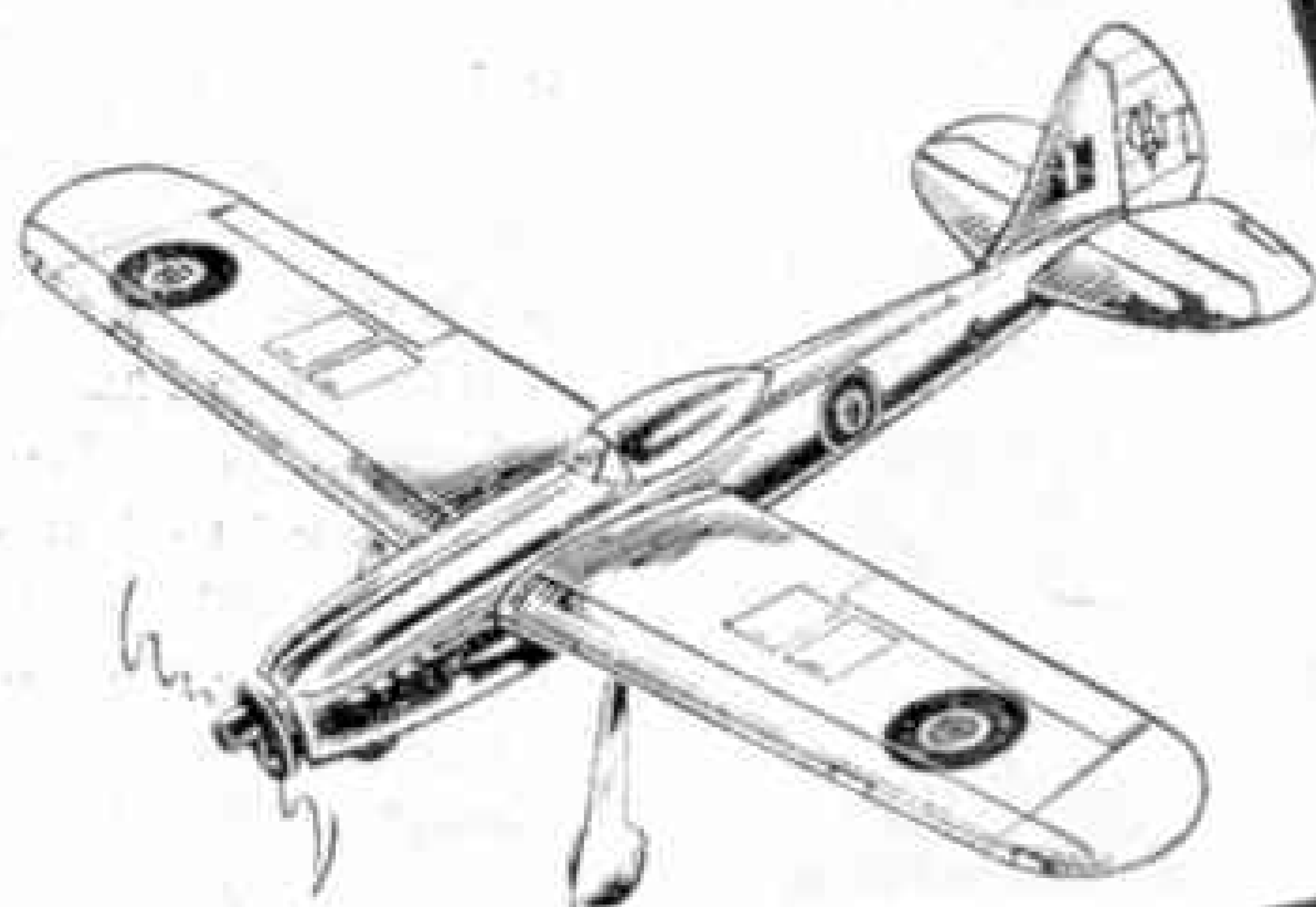
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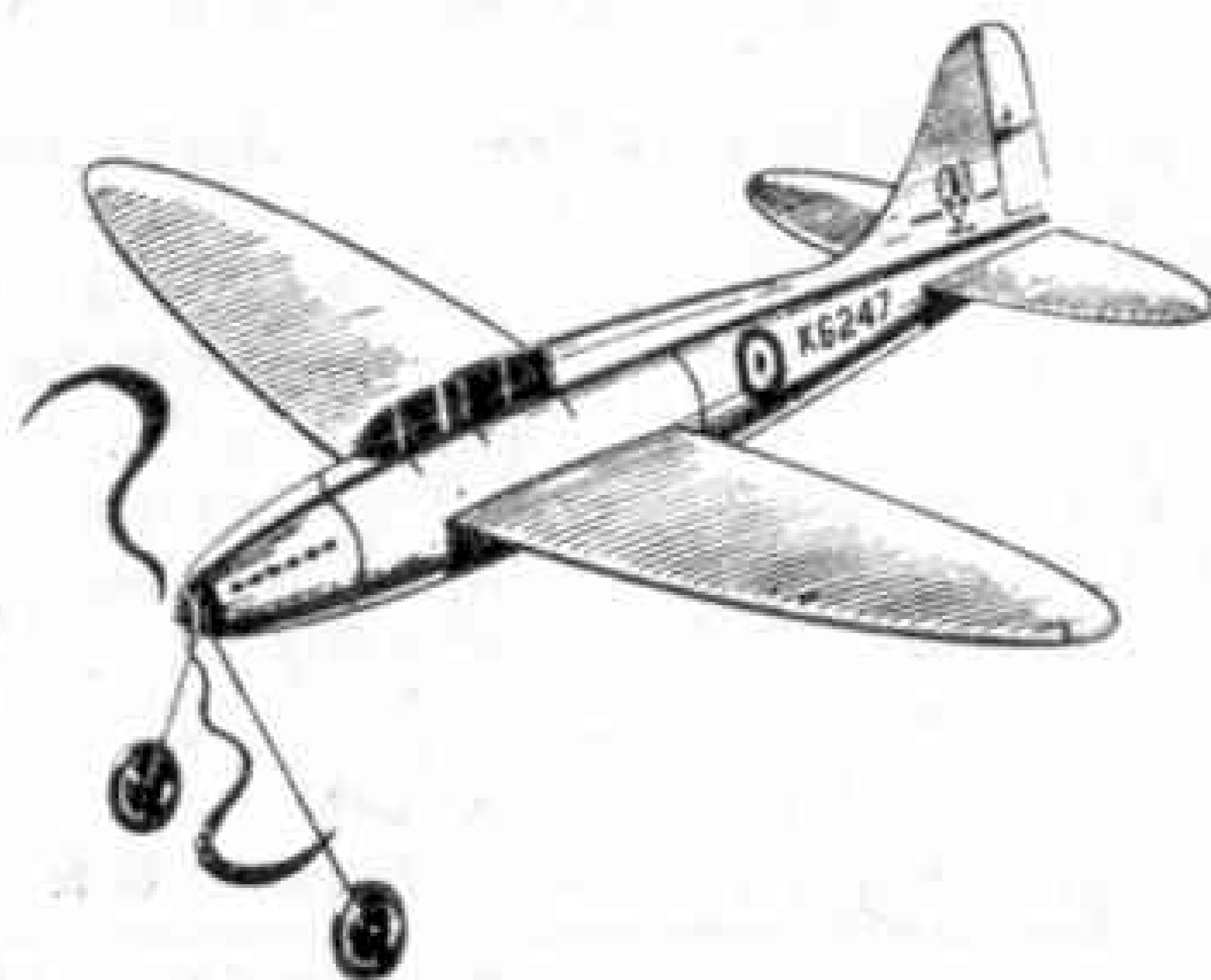
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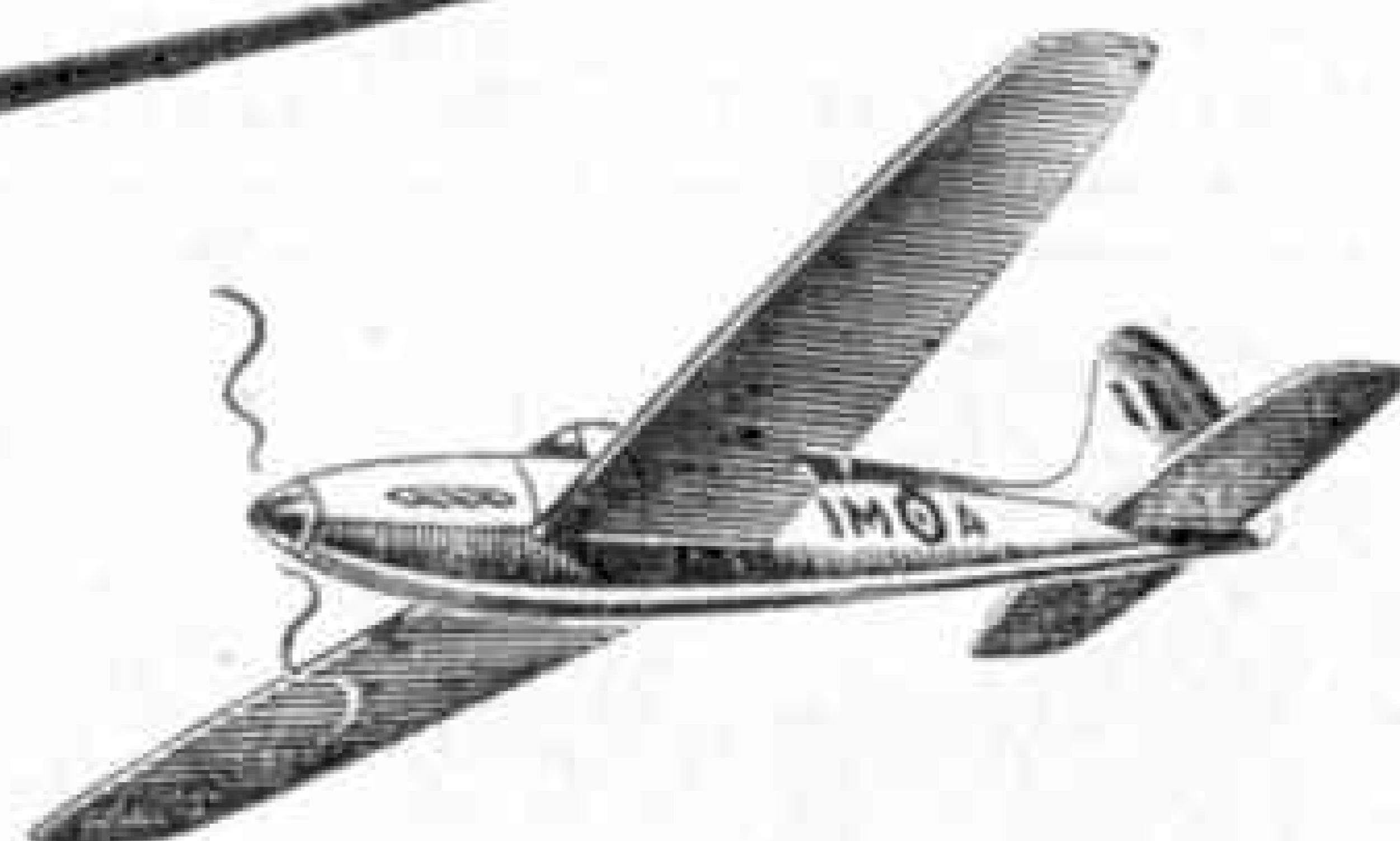
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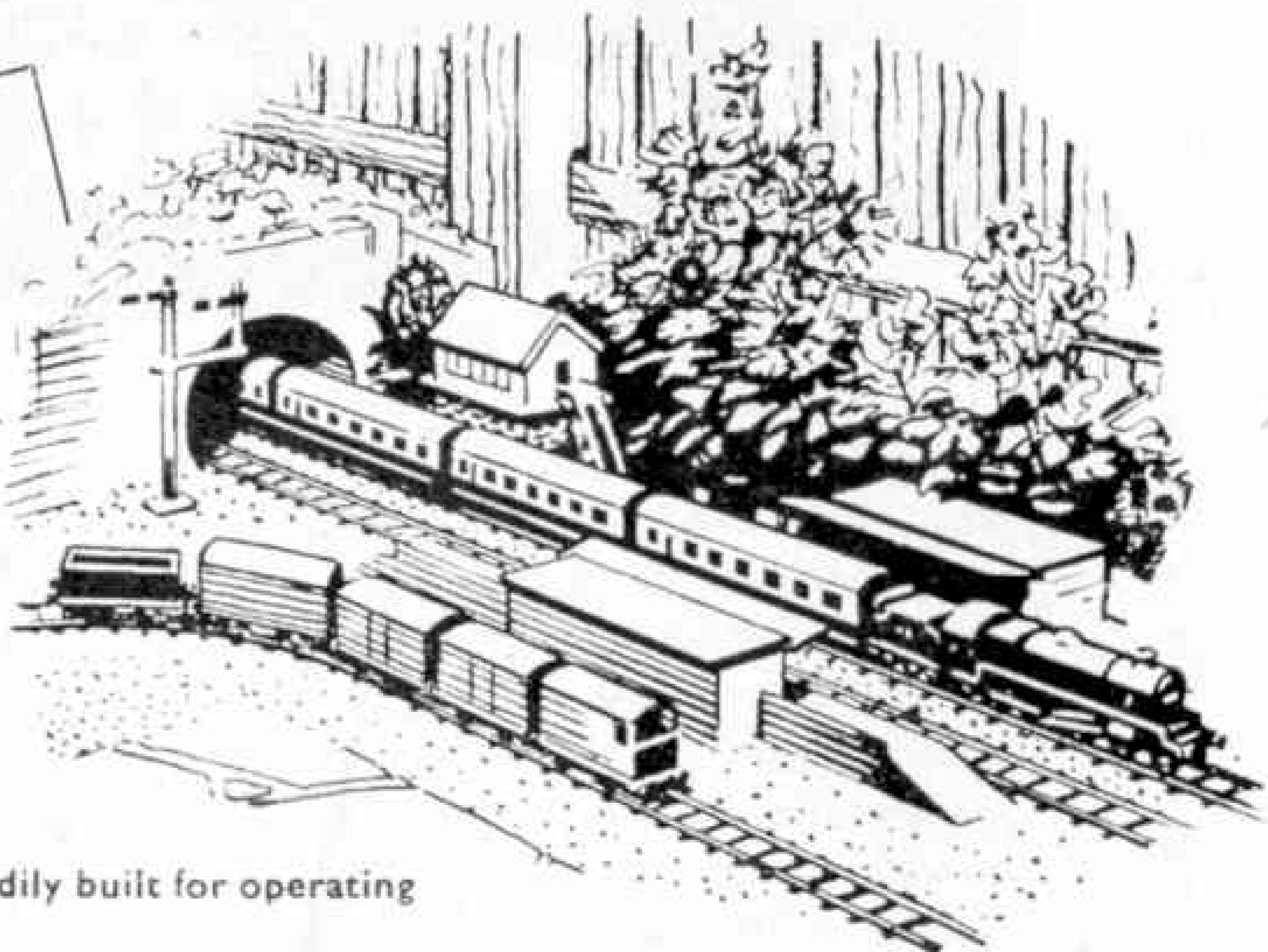
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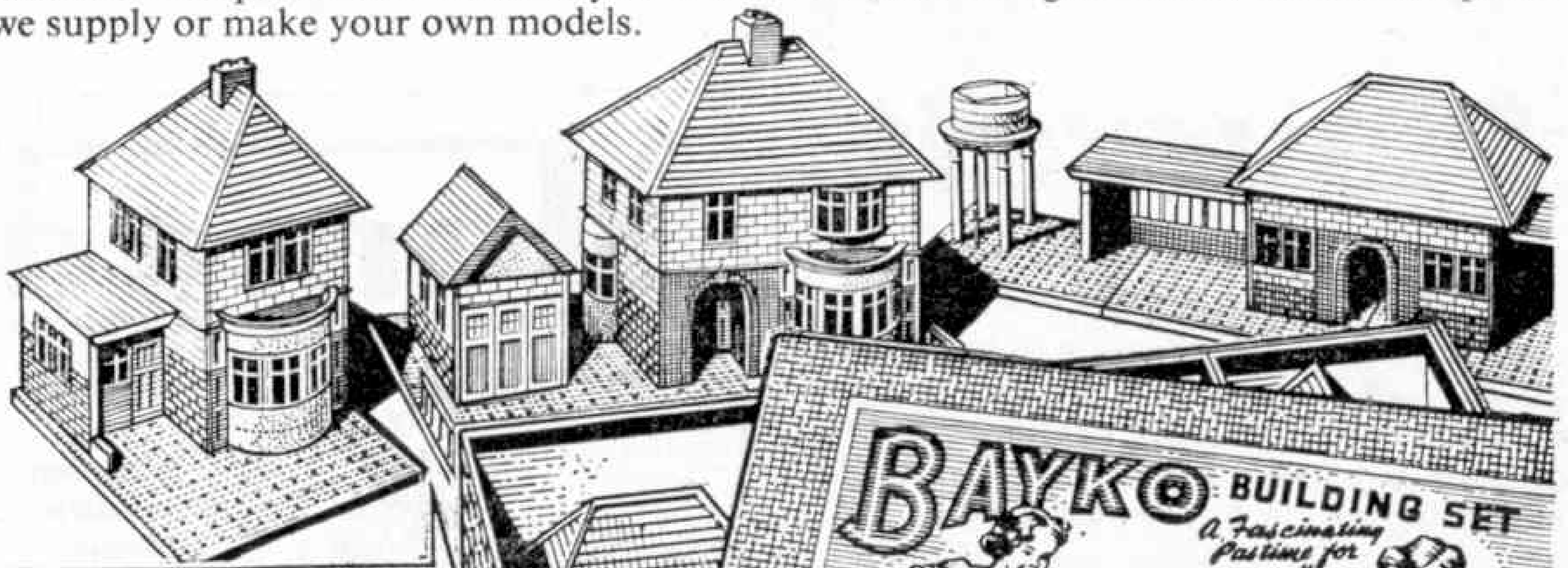




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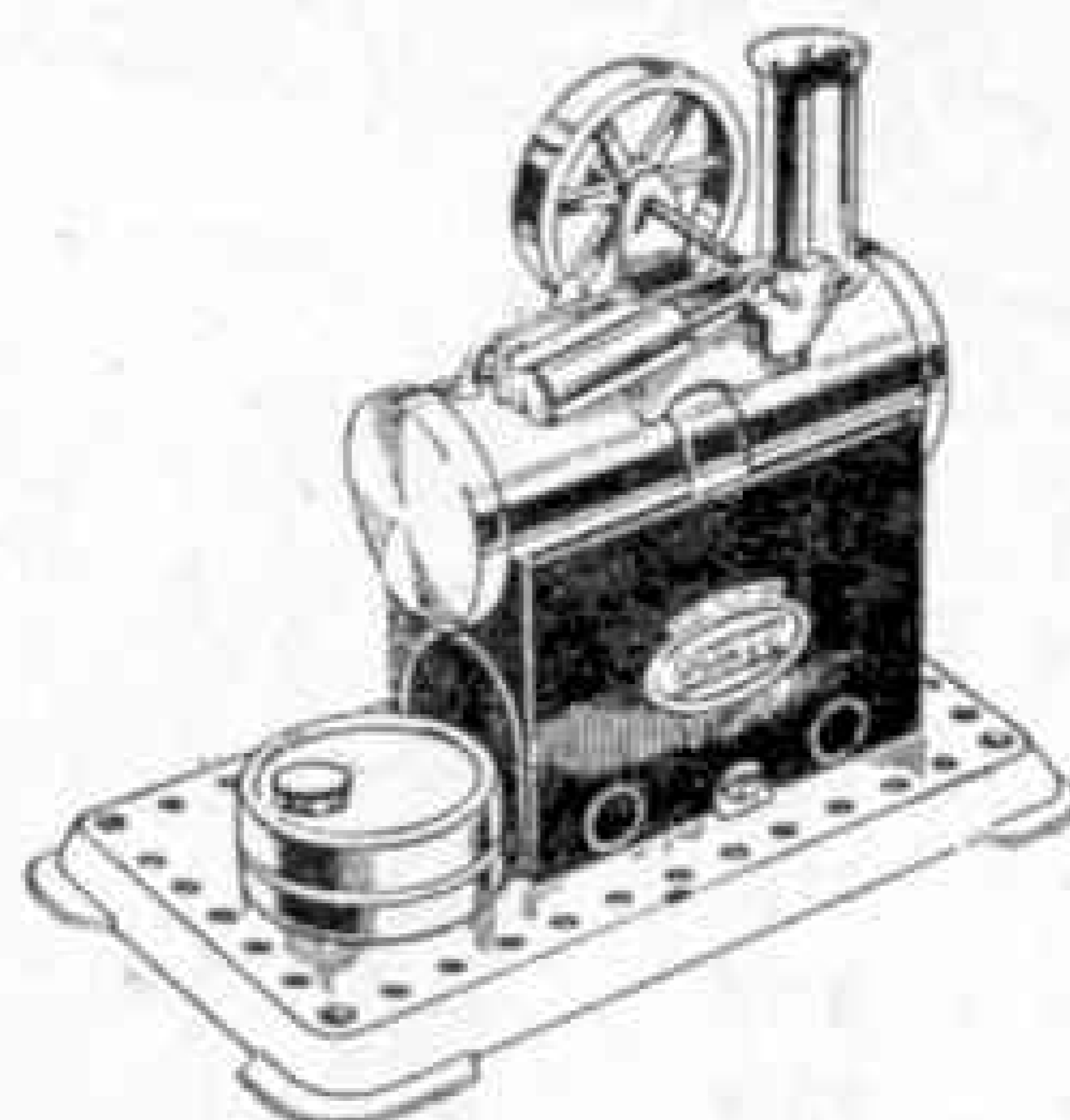
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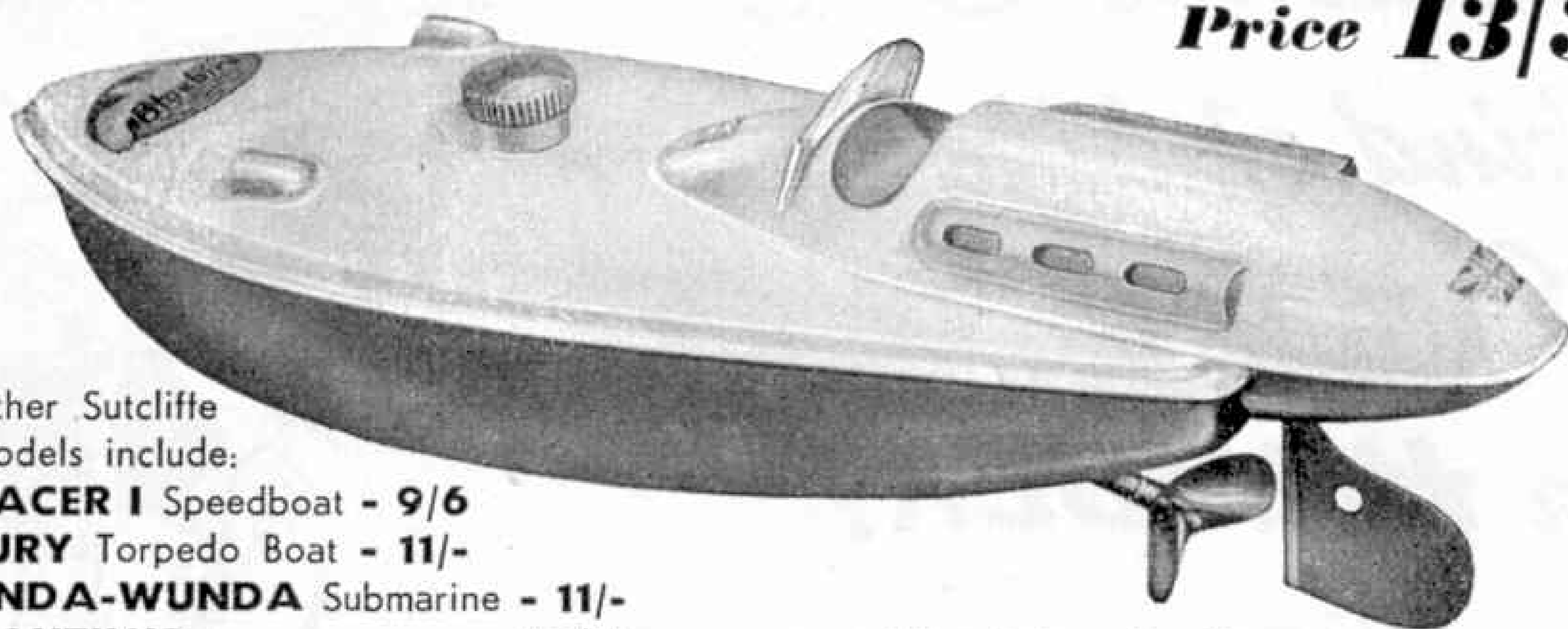
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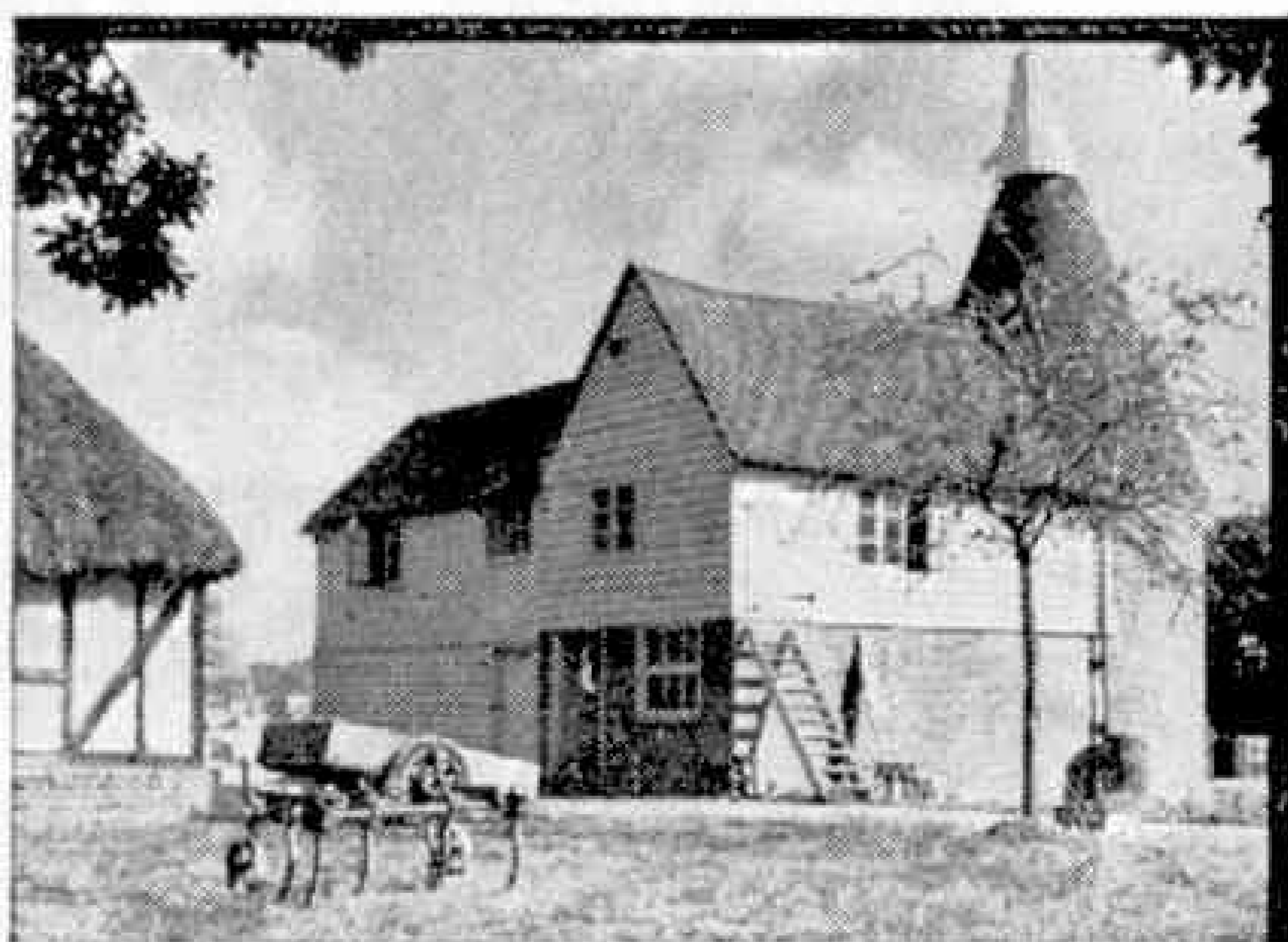
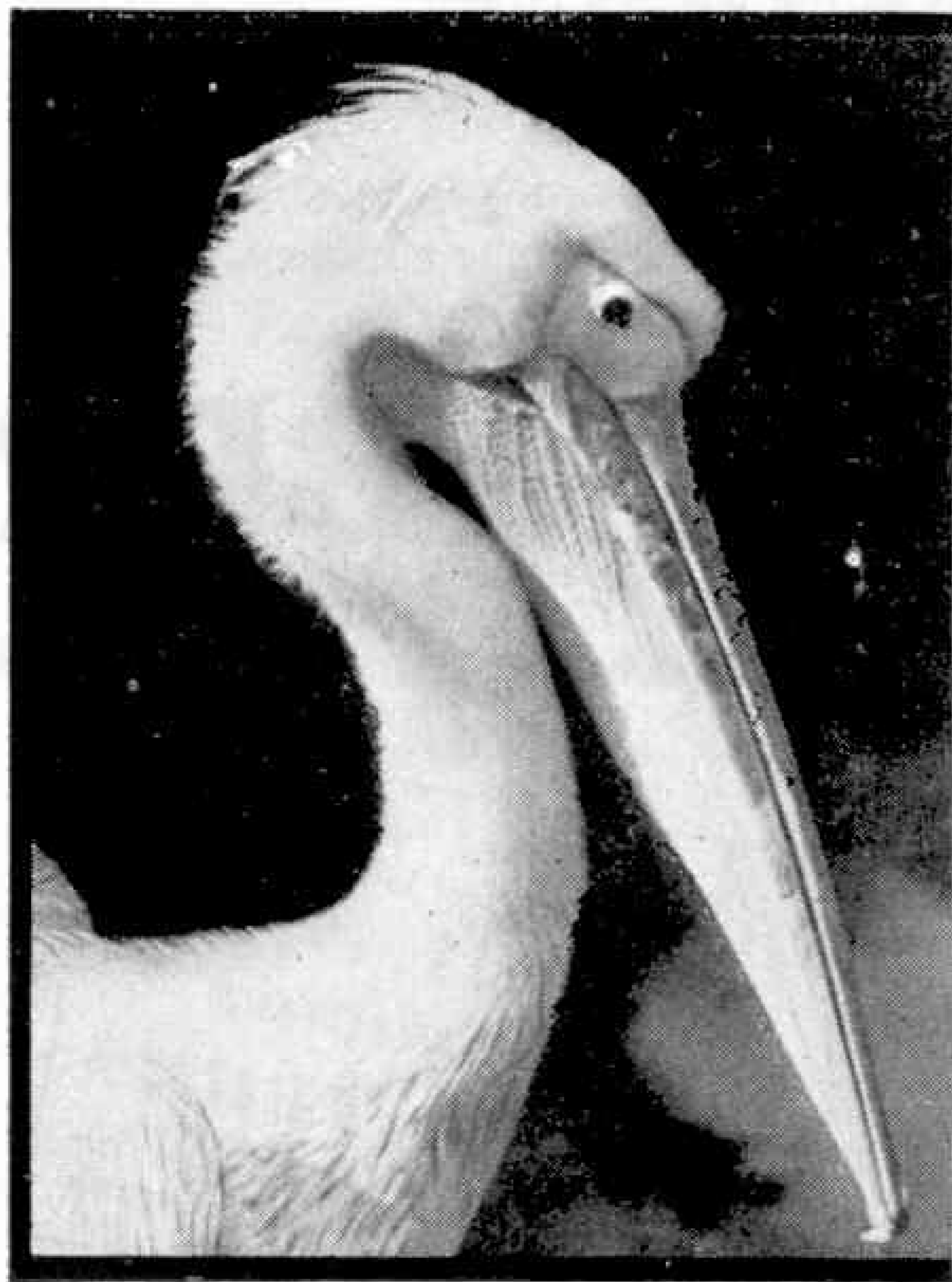
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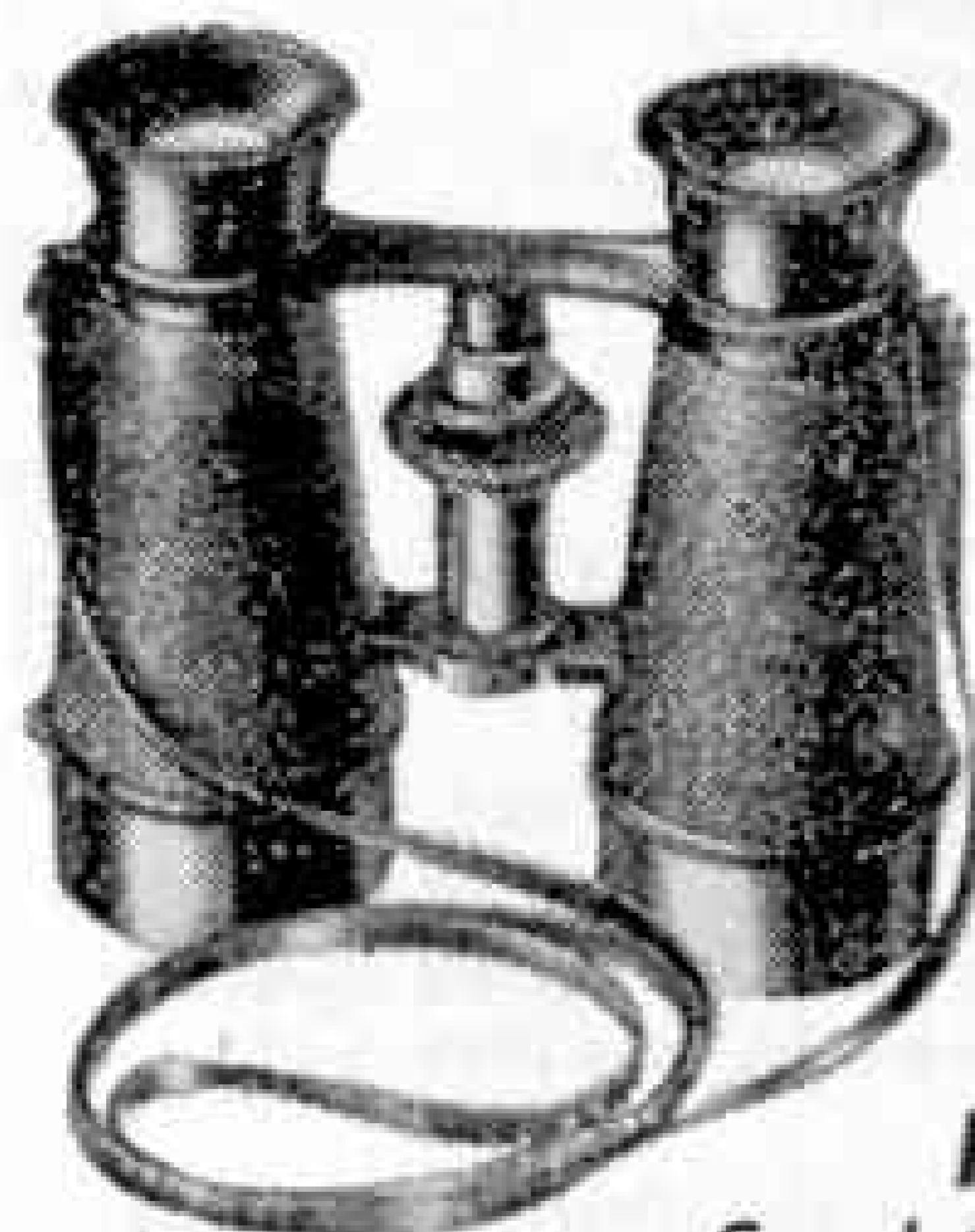
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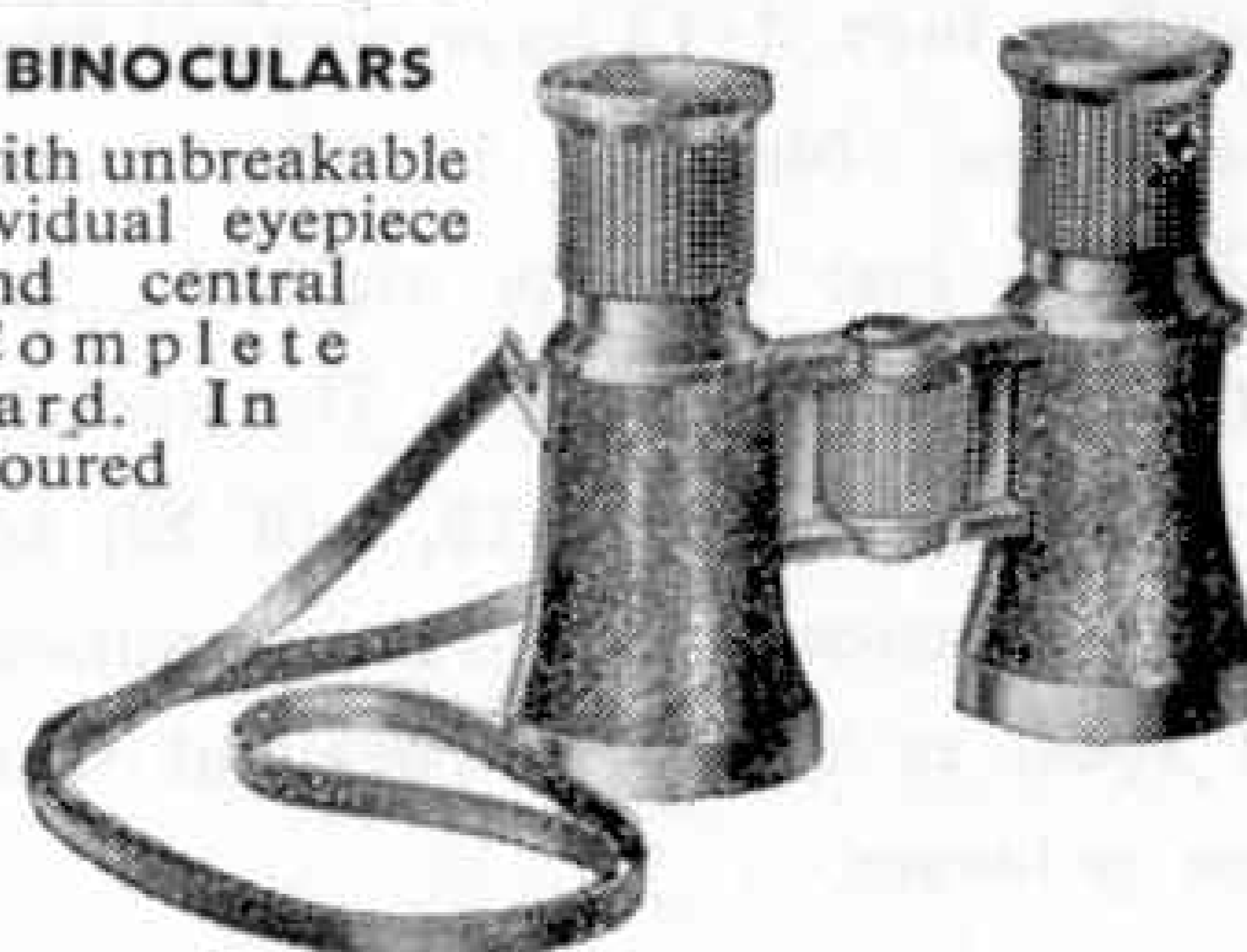
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It is intended to extend the range of Special Model Leaflets to a total of twenty. Each describes and illustrates in detail a fine new model made with Meccano Outfit No. 10. Leaflets Nos. 1-12 have already been published. Nos. 13, 14, 15, 16, and 17 have just become available, and are included in our list. The remaining three (Nos. 18, 19, and 20) are in preparation, and will be announced as soon as they are received from the printers.

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Next Month: "TRAIN NAME HEADBOARDS." By R. D. Stephen

MECCANO

MAGAZINE

Editorial Office:
Binns Road
Liverpool 13
England

EDITOR : FRANK RILEY, B.Sc.

Vol. XL
No. 6
June 1955

Looking High and Ahead

My picture this month gives a striking and unusual view of a famous bridge—that built across the Tamar at Saltash by



The Royal Albert Bridge seen from below. This famous railway bridge links Devon and Cornwall, crossing the Tamar at Saltash. Photograph by P. J. Norris, Ryde.

Brunel, the first engineer of the former Great Western Railway. Pictures of this bridge are well known, but practically all of them show either the two main spans across the central waterway, with their oval "bowed" wrought iron tubes,

the ends of each connected by suspension chains, or the view along the track. The photograph illustrates vividly how the bridge towers above Saltash itself, and emphasises the height of its piers.

ATOMIC LOCOMOTIVES?

This month's issue begins by looking into the future, first with a glimpse of what the proposals of the British Transport Commission will bring in the locomotive field, and then a forecast of the way in which atomic power will be used for generating electric current.

Although at first sight these may seem to be entirely separate topics, yet there is a connection between them. In the pioneer days of railways the locomotive was preferred to the stationary engine, with its cumbersome hauling gear, and in time even the few stationary engines used on certain steep inclines were abandoned. Now the British Transport Commission's proposal is to replace the steam locomotive by diesel-electric units to begin with, and later by electric locomotives, which would require a third rail or an overhead wire from a central power station. This would mean that few self-contained power units would eventually be seen on our railways—unless we develop a locomotive using atomic power.

As the second of our two articles shows, atomic power stations are certain to be built, and an atomic power plant for a submarine has already been constructed in the United States. So there is good reason to think that a locomotive driven by atomic power is quite possible, and I believe that plans for locomotives of this kind indeed are already being made.

The Editor



"Lady Norrie," a diesel-electric locomotive of the South Australian Railways. Photograph by courtesy of the English Electric Company Ltd.

THIS month's *M.M.* cover shows a diesel-electric locomotive at the head of an express train at Sherborne, on the Southern Region of British Railways. Locomotives of this type have appeared on L.M.R. and S.R. trains at times in recent years, and it is one of the L.M.R. units that is seen working an S.R. train on our cover, which is based on a photograph by Mr. Derrick Ives, Hastings.

A widespread change-over from steam to diesel and electric power is visualised in the British Transport Commission's 15-year plan for the modernisation and re-equipment of British Railways, as already mentioned in the *M.M.* Although steam locomotives are to continue in service for the time being, no new express or suburban ones are to be built after next year's programme has been completed.

The B.R. 15-year plan involves the electrification of two main traffic routes and the further extension of the already fairly widespread Southern Electric system, but on other routes it is proposed to introduce diesel power. The B.R. standard diesel-electric shunting locomotive is to be built in fairly large numbers during the next few years. These box-like, but efficient engines are already becoming

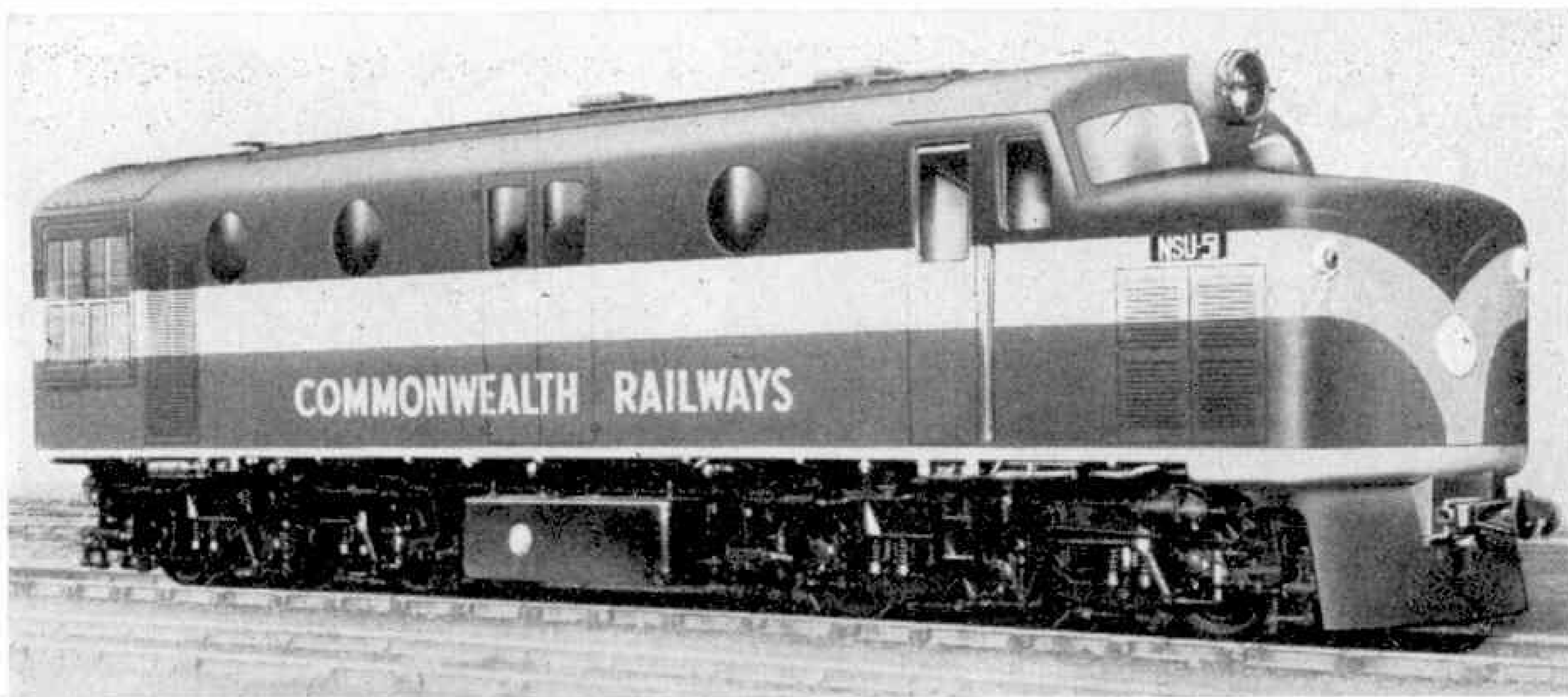
familiar, and even greater use of them can certainly be expected, but we cannot be quite sure that the later engines will look exactly like those that we know now.

The greatest interest will be taken in the possible form of the main line diesel-electric locomotives that it is intended will replace our familiar steam favourites on certain routes. There are in existence at least five main line diesel-electric locomotives, two of London Midland

origin and three developed by the Southern. Future standard diesel-electrics may quite well resemble neither type, at least as far as externals go, and they may

Our Diesel-Electric Future

not be built in B.R. Works, as most of their steam predecessors were. Use may be made instead of standard types developed by manufacturers with experience of this field of traction for overseas railways. Perhaps we shall see something like the *Lady Norrie* of the South Australian Government Railways, with her high bonnet and angled cab front, much like those of a giant car or lorry. The ends of the London Midland diesel-electrics are much shorter in comparison, but they include provision for centre gangway connections, while the Southern representatives have a plainer



A 3 ft. 6 in. gauge diesel-electric locomotive of the Commonwealth Railways of Australia. This was built by the Birmingham Carriage and Wagon Company Ltd., to whom we are indebted for this illustration.

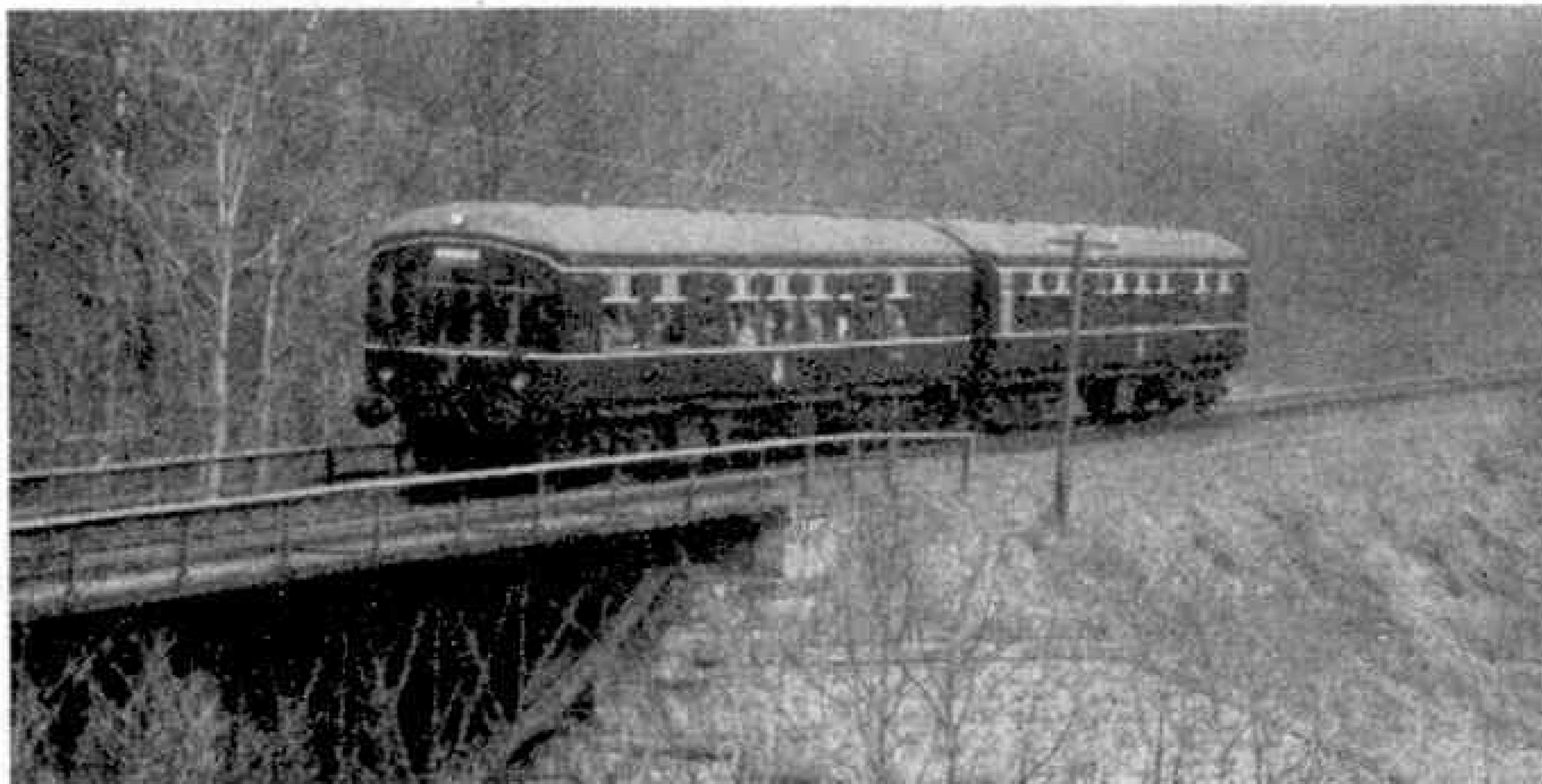
type of front end, with no "snout" at all. Possibly too the external finish of the new motive power will be more striking than the austere plain black of the present diesels. Why not let their painting match that of the rolling stock? It happens in other countries!

The diesel-electric locomotive is a costly thing to build, so it is necessary to make the greatest possible use of it. In this respect, as long as the servicing and repair facilities are adequate, the diesel locomotive scores over the steam engine. The latter has to be stopped periodically for boiler washout purposes, and fire-cleaning or fire-dropping, smoke-box and tube cleaning have to be carried out at the shed in the course of various turns of duty. So a diesel-electric locomotive can be in service for a greater proportion of its life than a steam one.

Another interesting point is that it is easier to bring a diesel-electric locomotive up to date when the time comes for a major overhaul. This idea is already being carried out in the United States, where the practice of "upgrading," that is the replacement of the old power unit by a larger, more modern and more powerful one, and the modification of other equipment, already promises to become quite usual.

Not all our future diesel-powered trains will be hauled by separate locomotives, as many services will be provided by trains of the multiple-unit type, presumably very much on the lines of those already in service in several areas. It is of interest to note that the institution of these services in Lincolnshire has prompted the construction of a new maintenance depot for them that is included among schemes recently approved for the Eastern Region of B.R. The depot will not only deal with the maintenance of the railcars, but it will also handle repairs to the diesel-electric shunting locomotives to be used there in the future.

Pits are to be provided for working on the underfloor engines and transmissions of the railcars, while platforms will allow work to be carried out on the shunting locomotives.



A B.R. two-car diesel unit between Threlkeld and Keswick. Photograph by W. S. Garth.

Power from the Atom

By the Editor

WHEN we use coal and oil for developing power they burn away. There is a limit to the amount of these fuels that we can extract from the earth, so some day we shall run out of them. Water power will remain available much longer, and the winds too might help, but these cannot supply all our growing needs. Where, then, can we look for other sources of power?

The Sun's light and heat may eventually be harnessed, but the only source that seems practicable now is the atom, a tiny storehouse of immense and frightening power that made its first public appearance in the world when atomic bombs were exploded over Japan. Atomic energy is a promising source of power on a vast scale. Stations in which it will yield electric power indeed are already under construction, in Great Britain and in the United States, and plans have been made for further developments.

Before we see how these stations will work, it will be as well to see how atomic energy itself is liberated. When coal or oil is burned, the changes that take place are chemical, which means that only the electrons, or outer units of the atoms taking part, are concerned. The nucleus, the tiny central part about which the electrons rotate, is not changed. To release the energy of the nucleus it is necessary to penetrate into it in some way and to break it up.

One way in which this can be done, and indeed the way that is followed in the production of power from atomic energy, is to shoot what are called neutrons into the nucleus of the atom. Those of you who take physics at school probably know that a neutron is made up of a proton, which has a positive electrical charge, and an electron,



The illustration at the head of the page shows the building of one of the two nuclear reactors at the experimental atomic power station at Calder Hall, in Cumberland. In the foreground is a part of the reactor pressure vessel, waiting to be lifted inside the 120 ft. building ready to house the heart of the atomic pile. British Official photographs.

a very tiny particle with which we have been familiar now for many years, that has an equal negative charge. So the total charge of the neutron is zero, and that explains why it easily penetrates into the nucleus.

The elements to be used of course must be chosen carefully, for only a few will give the desired result. The one to be used in the first atomic power stations is uranium. The natural uranium that we extract from

uranium ores contains a very small proportion, less than 1 per cent., of another kind of uranium, which chemists distinguish by the name uranium 235.

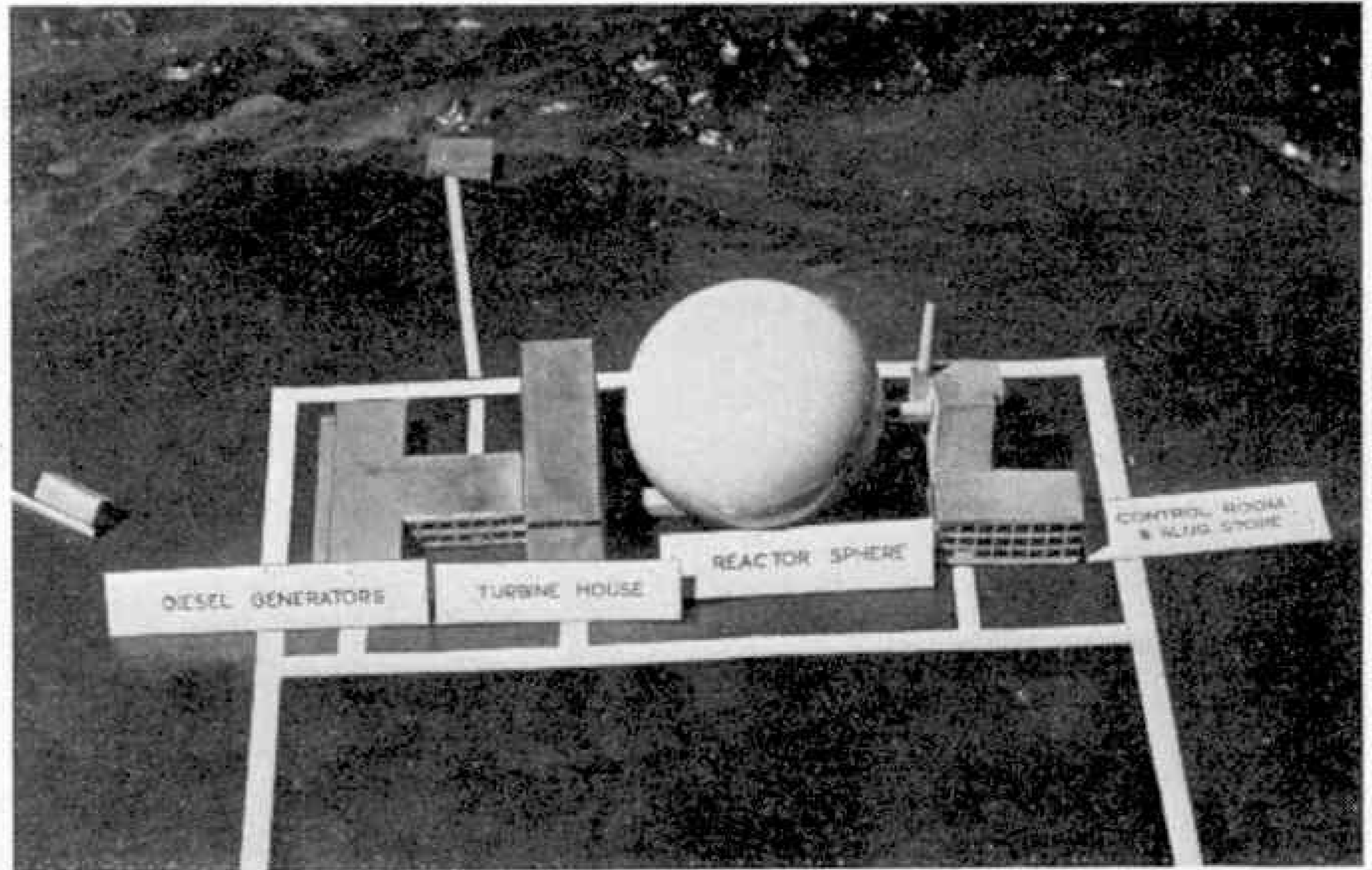
When this is bombarded with neutrons its nuclei are broken up. And then a strange thing happens. The break up of the nuclei sets more neutrons free. These penetrate other atoms of uranium 235, which in turn are broken up, releasing still more neutrons. And so this breaking up process speeds up and intensifies, giving what is usually described as a chain reaction. As the nuclei are split energy is released in the form of heat, which in the new kind of power station is to be used for generating electric current.

What happens to the neutrons depends on their speed. If they travel fast when shot out of an atom of uranium 235 they are absorbed by the atoms of ordinary uranium, which is known as uranium 238, and the nucleus of this does not break up. To get the best results as many as possible should be absorbed, not by uranium 238, but by the uranium 235

Part of a scale model of Britain's second experimental atomic power station, soon to be built at Dounreay, in the north of Scotland. The steel reactor sphere will be about 150 ft. in diameter.

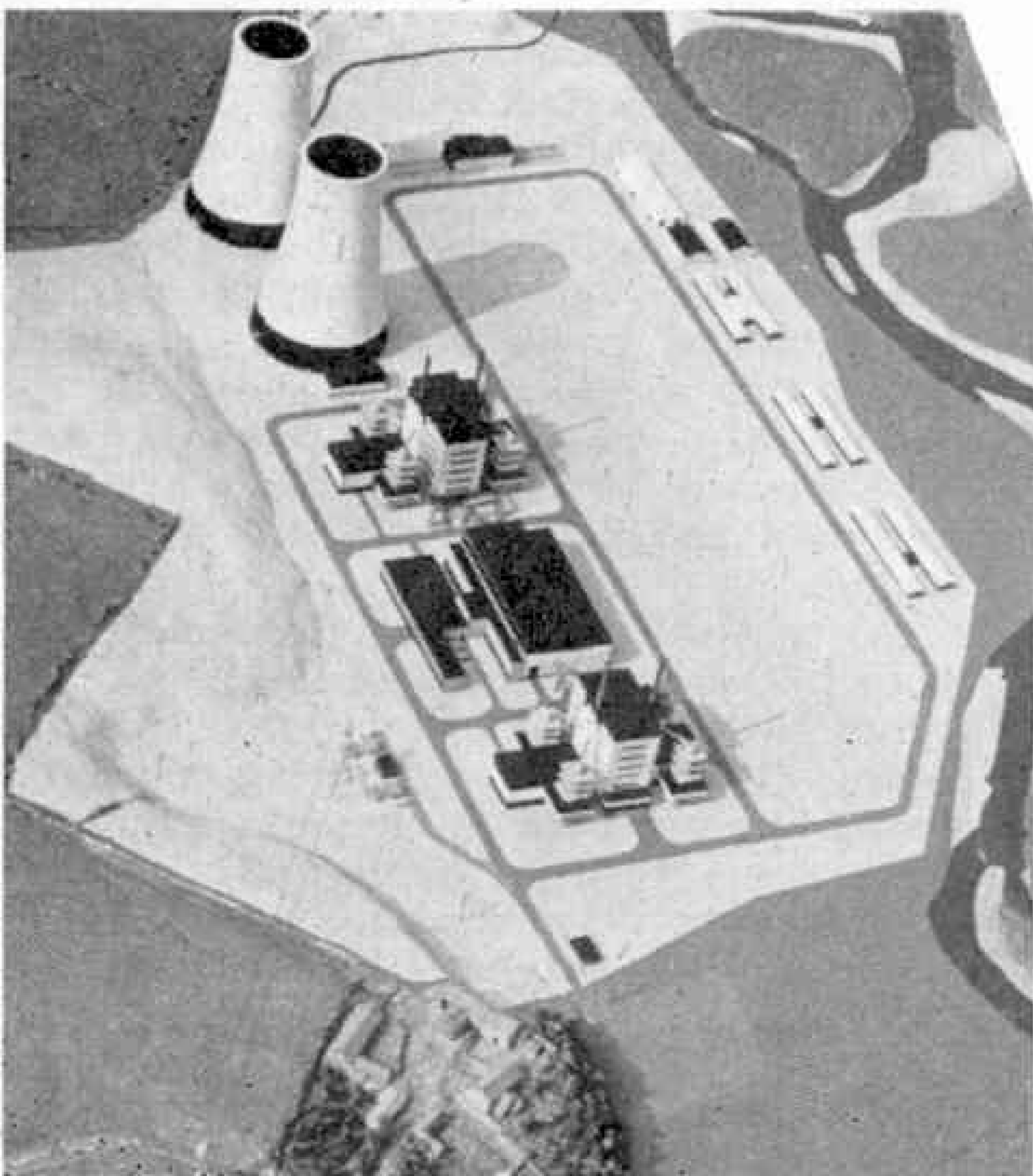
present, and this happens when their speed is comparatively slow. So the uranium is formed into rods, usually "canned" in tubes of aluminium, which are placed in channels left in a structure built of specially prepared graphite bricks, which slows down the neutrons to the speed that gives them the best chance of being absorbed by the uranium 235. The whole structure forms what is called an atomic pile.

In the British experimental station now under construction at Calder Hall, Cumberland, the heat produced will be carried out of the pile by means of a gas flowing through it. The gas is a well-known one—carbon dioxide, which is present in



in the air we breathe out, and is formed when anything containing the element carbon is burned. From the pile the gas will pass through heat exchangers, where its heat will be used to boil water, and so to produce steam. The rest is well-known. The steam will drive turbines, which in turn will drive alternators to produce electric current.

One of the accompanying illustrations shows a model of the station as it will look when it is completed. The central and novel feature of course will be the atomic pile. Actually there will be two of these nuclear reactors, as they are called, at Calder Hall. They are carefully designed to prevent the escape of harmful products. The core of each will consist of a mass of graphite, hundreds of tons in weight, enclosed in a pressure shell of steel, which is surrounded by concrete to shield the outside world from radiation. The channels for the uranium containers will be vertical. The temperature will rise to its highest when all the rods are pushed down into the core, and it will be controlled by moving them in or out of the core, as required. This will be done automatically, rods being pushed



This model shows what the Calder Hall station will look like when completed. The two tall structures are the water cooling towers.

farther into the core, or pulled out of it, as the temperature falls below that at which the pile is intended to work, or rises above it. It is comforting to know that an atomic explosion cannot happen in the pile!

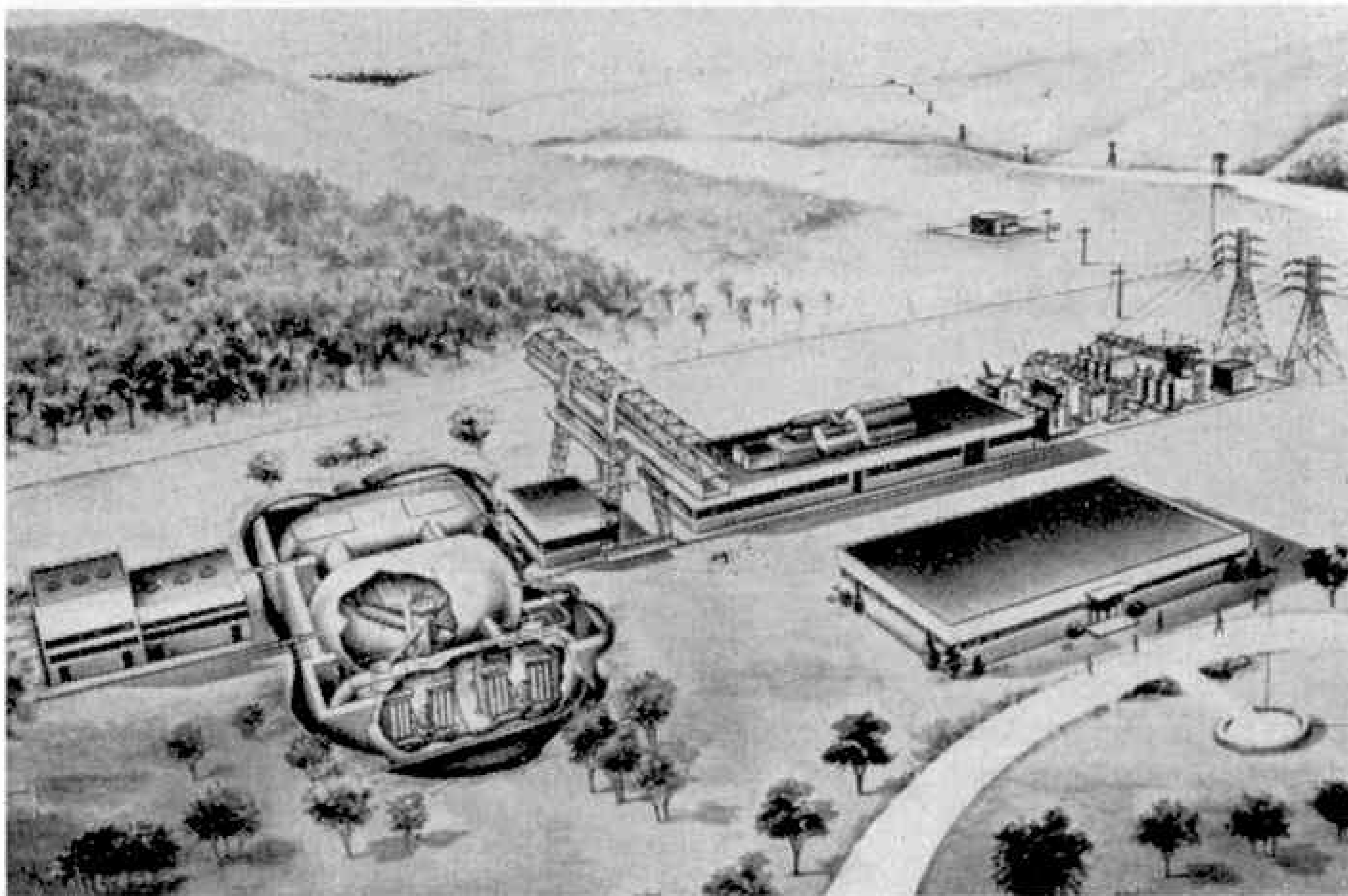
The nuclear reactor of the atomic power station that is being constructed in the United States is being placed underground in structures of steel and concrete, as are the heat exchangers. This power station will differ from that

account the cost of the electricity produced will be very much the same as that of a coal-fired station.

To understand that we must return to the absorption of neutrons in the pile. It will be recalled that the slower neutrons are those absorbed by uranium 235, and that the fast neutrons are absorbed by the uranium 238 that forms the greater part of the rods of the metal. When these faster neutrons enter the nuclei of uranium 238, the end result is a new element, not

previously known to occur in the earth at all.

This remarkable product is called plutonium and it



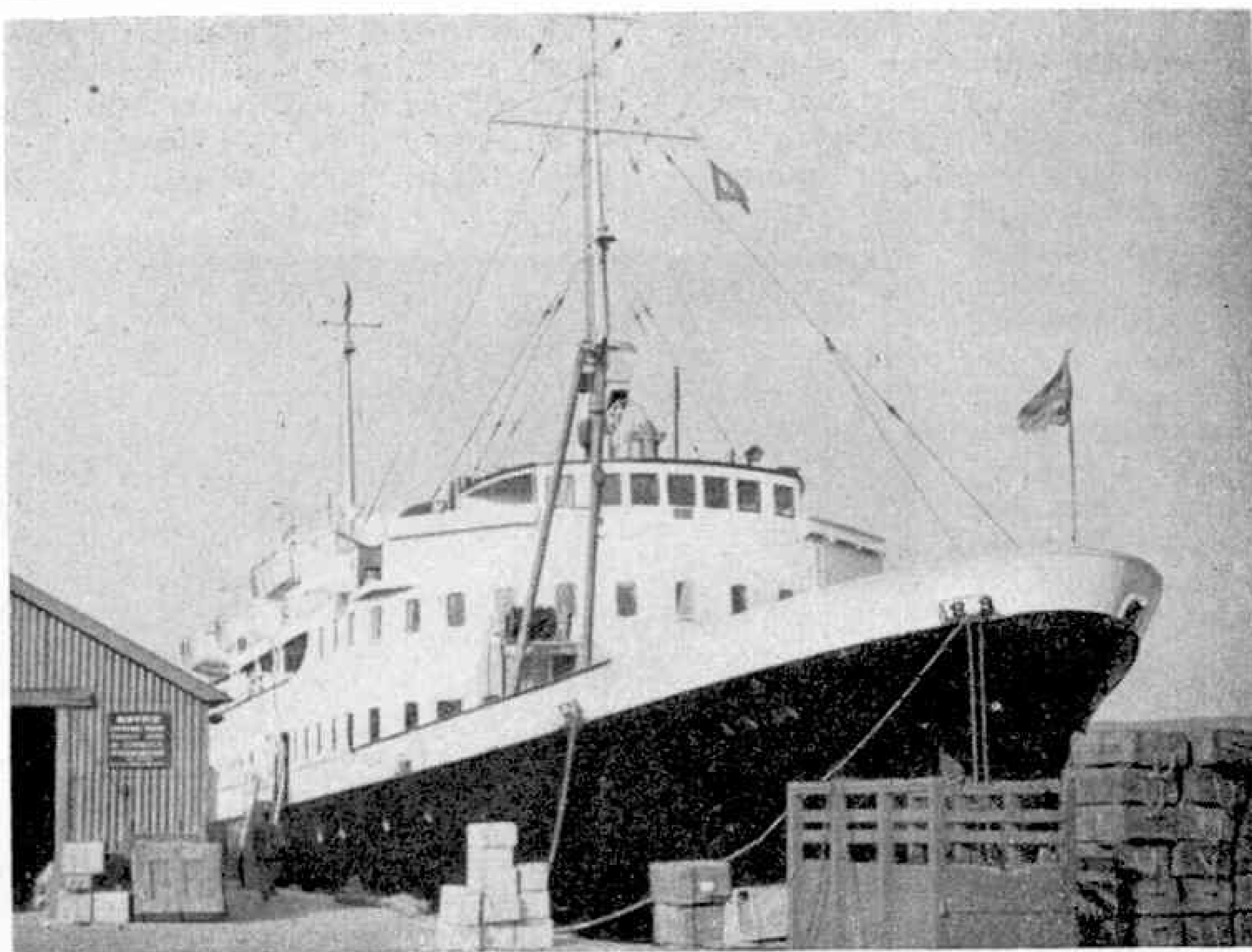
A sketch of the first full scale atomic power plant to be built in the United States, at Shippingport, Pennsylvania. Most of it will be underground. Photograph by courtesy of the Westinghouse Electric Corporation.

being built at Calder Hall in that gas will not be used for transferring heat from the reactor to the heat exchangers. Instead water at a pressure of about 2,000 lb. per sq. in. will be used. This will reach a temperature of about 525 deg. F., nearly three times that at which water normally boils, but the enormous pressure will prevent it from actually boiling. The water to which its heat will be transferred *will* boil, as it will be under ordinary atmospheric pressure, and it is the steam from this water that will drive the turbines of the electric generating system.

In a modern coal-fired electric power station in Great Britain the cost of generating current is about six-tenths of a penny a unit. When the new way of generating electricity is established, which of course will not be until many years hence, it is thought that the cost per unit of the electricity produced by it can be brought down to about 1d. per unit. But the atomic power station can be designed to produce something that in itself is very valuable, and when this is taken into

therefore itself a suitable "fuel" for an atomic pile. So here we have the exciting prospect of building a pile that can be made to produce new fuel while yielding electric power. A plant in which this is done is called a breeder station, and at Dounreay, in the far north of Scotland, a start has been made with the construction of an experimental power station of this kind. What this will look like is shown by the picture of a model on the previous page. The core will be a cylinder about 2 ft. long and the cooling material will be liquid sodium.

After Calder Hall and Dounreay will come other stations, and in about ten years these will add from 1,500 to 2,000 megawatts to our generating capacity, which is equivalent to that now produced by burning from five to six million tons of coal a year. The quantity of plutonium made at Dounreay will be less than the quantity of uranium 235 used up, but reactors using plutonium with uranium 238 are in prospect that will actually produce more fuel than they consume.



Ships in Northern Waters

Services to the Orkneys and Shetlands

By J. M. Cramb

WE have all heard the joke about the boy who, when asked the position of the Orkney and Shetland Islands, replied that they were in a little box on the right hand side of the map. On the map before me at this moment, for convenience in printing this little box with the islands inside is situated off the Moray Firth. If this were the true position of the islands, it would be very much more convenient for the inhabitants, and also for the ships which serve these far off communities. But in reality, Kirkwall, in Orkney, is about 26 miles due north of John O'Groats and across the stormy waters of the Pentland Firth, while Lerwick in Shetland—the "w" is pronounced, unlike that in Berwick—is a further 98 miles by sea north-east of Kirkwall, the main part of the Shetlands lying north of latitude 60.

This latitude is the same as that of north Labrador and parts of Alaska. But let it be quite definitely stated before proceeding further, that there are no icebergs to be seen in the waters surrounding

the Shetland Islands, no polar bears or penguins. The inhabitants do not look like Eskimos, and the winter weather so far as regards snow and frost, is less severe than in many places several hundred miles to the south, thanks to the influence of the Gulf Stream.

The Orcadians and Shetlanders are islanders and therefore dependent on sea transport as a means of communication. For a great many years this service has been provided by the North of Scotland, Orkney and Shetland Shipping Company Limited, which has its headquarters in the granite city of Aberdeen.

Of the eight ships belonging to the company, the M.V. *St. Ninian* with its gross tonnage of 2,242 is the largest, and plies between the ports of Leith, Aberdeen, Kirkwall, and Lerwick. The times between these ports are about seven hours between Leith and Aberdeen, eleven between Aberdeen and Kirkwall, and eight between Kirkwall and Lerwick.

The *St. Ninian* was built in 1950 at the

The motor vessel "St. Ninian", of the Orkney and Shetland Shipping Co. Ltd., at Lerwick, in the Shetlands.

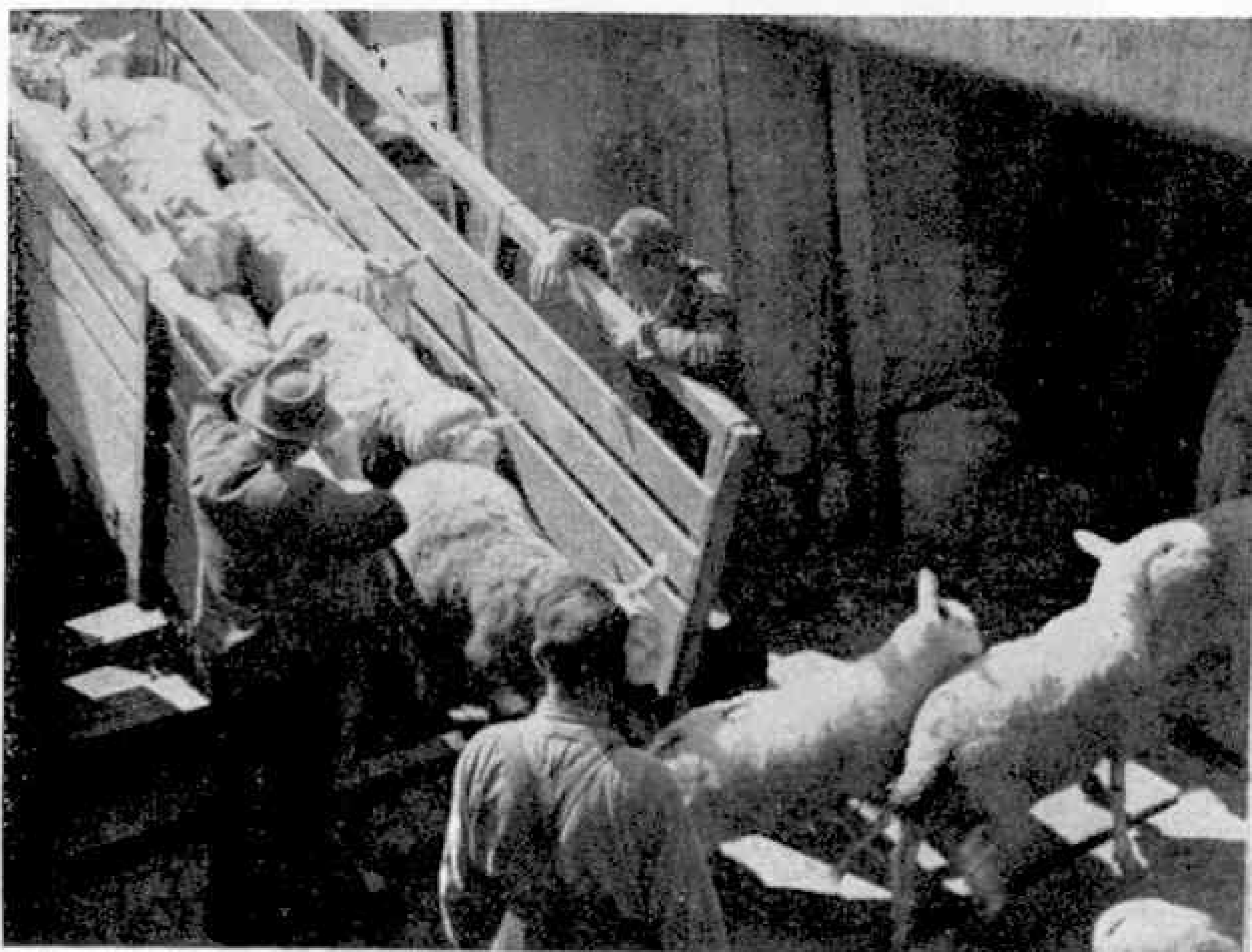
Dundee yard of the Caledon Shipbuilding and Engineering Company Limited, propulsion being provided by two eight cylinder British Polar diesels driving twin screws. An oil-fired boiler for domestic hot water is fitted, but all the winches and derricks are electrically powered, as is the usual practice on motor ships.

As one would expect in a ship that spends much of her time in waters scattered with rocks and islands, radar (Marconi Marine) is fitted, together with direction finding and echo sounding equipment, and radio-telephony and wireless telegraphy sets. All the company's passenger ships are fitted with radar.

Cabin accommodation for 160 first class passengers is provided on four decks, and a maximum of 475 second and third class passengers may be carried, although there is not cabin accommodation for the whole of this latter figure.

The first class lounge and the smoke room are on the promenade deck aft of the funnel, on the port and starboard sides respectively. The dining saloon is on the same deck and below the bridge. Forward

and aft of the main superstructure are the cargo holds, together with the necessary handling gear, which on the *St. Ninian* is all mounted on the starboard side, the ship always tying up with this side next

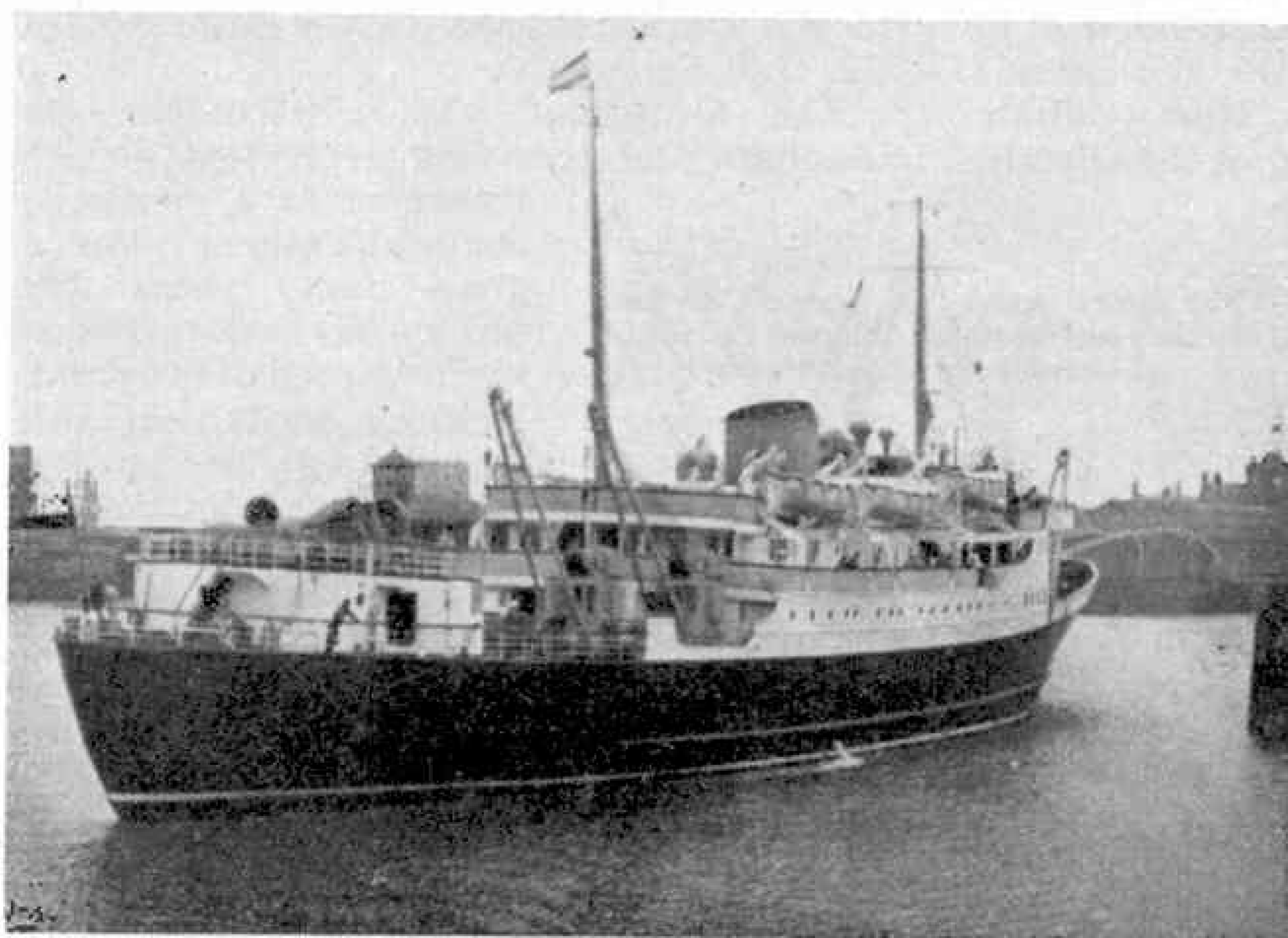


Sheep being taken on board the "*St. Ninian*" for transport to markets in the south.

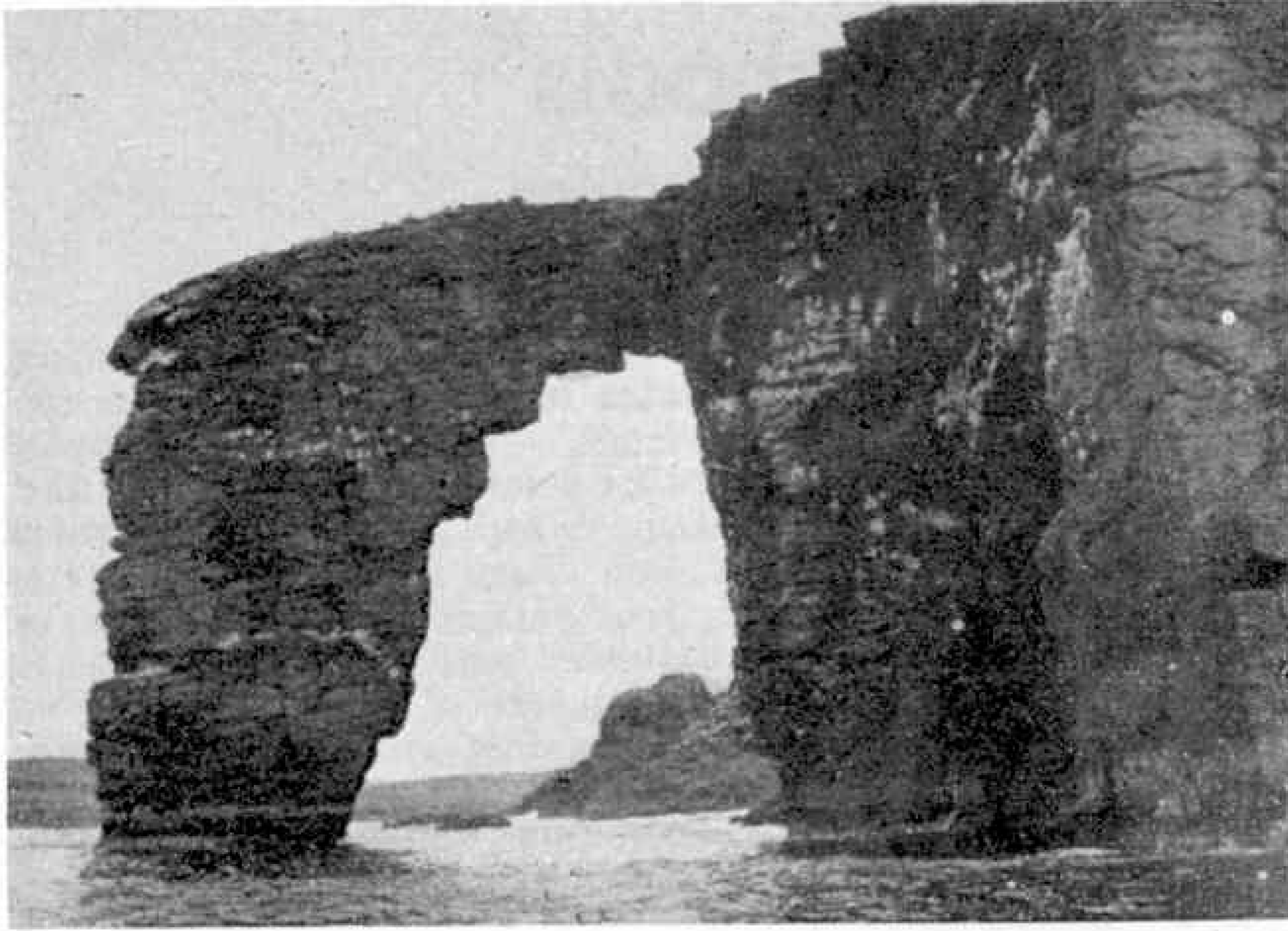
to the quay when cargo is being moved. This arrangement reduces the required number of derricks by a half and, an important point on a passenger carrying vessel, it increases the area of clear deck space.

Of necessity, a wide variety of cargo is carried between the various ports of call. On the outward voyage to the islands a g r i c u l t u r a l implements, fertilisers, cattle foods, new motor cars, livestock, and various foodstuffs in bulk are transported; while on the return trip eggs from Orkney, live lobsters in special boxes for Billingsgate, and fish form part of the cargo. The fish and lobsters are unloaded at Aberdeen and continue their journey south by fast goods train.

Other ships which serve these islands and belong to the same



The "*St. Ninian*" coming alongside at Leith, her southernmost port of call.



Dore Holm, a grotesque rock formation in St. Magnus Bay, Shetland, that is frequented by thousands of sea birds.

from Lerwick and calling at Whalsay, Skerries, Midyell, Brough Lodge, Uyeasound, Cullivoe and Baltasound.

In the summer months, the Orkneys and Shetlands attract visitors from the mainland, and although there are regular air services, many people prefer the more leisured sea voyage, with visits to the various ports en route. To satisfy this demand, the shipping

company include the S.S. *St. Magnus*, of 1 601 gross tons, built in 1924 by Hall Russell and Company Ltd., Aberdeen, which provides cargo and passenger services; and the M.V. *St. Ola*, of 750 gross tons, which was built in 1951 by A. Hall and Company Ltd., Aberdeen, and carries passengers and cargo between Scrabster (Thurso) and Stromness in Orkney. There are also the S.S. *St. Clair*, of 1,641 gross tons, and the M.V. *St. Clement* of 460 gross tons, both built by Hall Russell and Company Ltd., Aberdeen, the former in 1937 and the latter in 1946. The M.V. *St. Rognvald*, 1,400 gross tons, built by A. Hall and Company Ltd., Aberdeen, and completed in 1955, the S.S. *Rora Head*, 497 gross tons, built in 1921 by Day Summers and Company Ltd., Southampton, and the M.V. *Earl of Zetland*, 548 gross tons, which was built in 1939 by Hall Russell and Company Ltd., Aberdeen, complete the list. The *Rora Head* carries cargo only; the other vessels provide both cargo and passenger services.

The *Earl of Zetland* serves the north isles of Shetland, operating

company has provided a number of "inclusive cruises" from Aberdeen and Leith and, for those who wish, a week's stay at various hotels in the Orkney or Shetland Islands.

While the city dweller may feel lost away from his cinemas and similar entertainments, these islands of the north provide a rich ground for the nature follower, with an amazing profusion of sea birds, seals, basking sharks, and of course Shetland ponies. There is ample opportunity also for the fisherman, photographer or hiker to follow his own particular hobby far from the turmoil and clamour of our close packed industrial cities.



The "St. Ninian" at Leith. A powerful electric crane is mounted forward of the bridge.

The S.R. "Schools"

A Locomotive Silver Jubilee

By R. A. H. Weight

THE famous S.R. Schools or V class engines were introduced in 1930, 25 years ago, largely for the main London-Hastings route, which presents very restricted clearances through narrow tunnels and bridges, especially between Tunbridge Wells and Battle. The maximum allowable width of any vehicle on this route is 8 ft. 6½ in., compared with round about 9 ft., which is quite usual for the largest locomotives and carriages on numerous principal routes. The direct Hastings line also has many sharp curves that do not suit an engine with a long fixed wheel base; it is steeply graded, too, as on the Kent coast

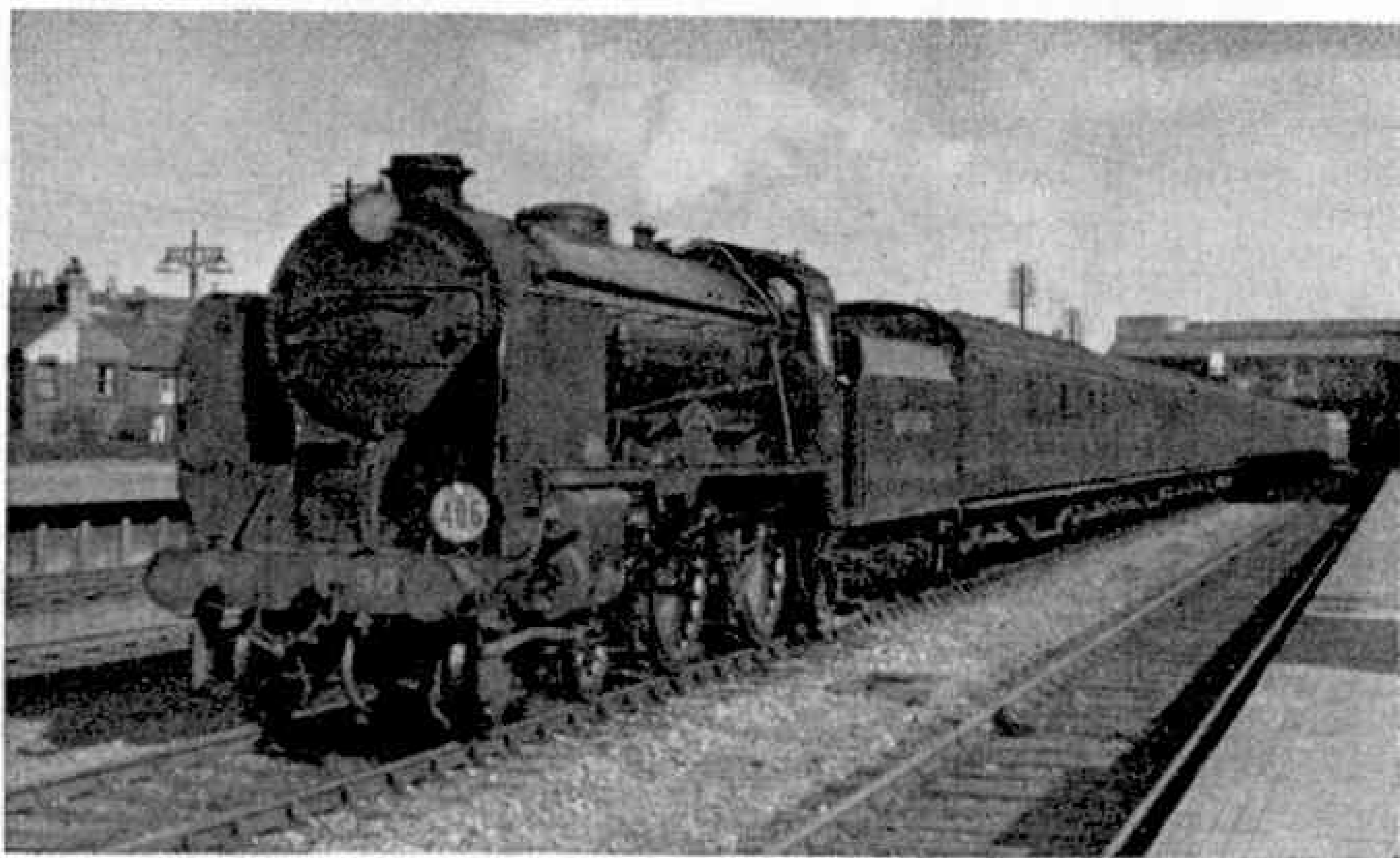
The 2.10 p.m. fast train from Hastings passing Tonbridge on the main line. The Schools class engine is No. 905 "Tonbridge" of St. Leonards shed, now 30905. Photograph by D. L. Bradley.

main line west of Tonbridge, on which the Hastings trains travel for nearly 30 miles.

When designing the engines it was necessary therefore to secure the maximum possible power within definite limits of length, height and width. As a result No. 900 *Eton* emerged from Eastleigh Works in the Spring of 1930 as the first of 40 really outstanding 4-4-0 express locomotives. These were not only the last 4-4-0s to be built in Britain as a new class, but they were and are the most powerful of this type in Europe and probably in the world. By 1930, of course, six-coupled main line engines, either 4-6-0s or 4-6-2s, were much more in vogue, and on the S.R. the 2-cyl. King Arthur and 4-cyl. Lord Nelson 4-6-0s were already established.

Although these latest 4-4-0s have a round-top firebox more like that standard

on King Arthurs, they contain many constructional features standard with the larger Nelsons, such as bogies, valves, pistons, boiler steam pressure, motion and frame parts, cylinder and driving wheel diameter, etc. They have three cylinders, however, two outside and one inside, of 16½ in. diameter with 26 in. stroke, each actuated by a set of Walschaerts valve gear. In conjunction with a boiler pressure of 220 lb. per sq. in., a combined heating surface including superheater of 2,049 sq. ft., a liberal grate area and long travel



piston valves, this makes for a powerful and fast locomotive within an overall length, including tender, that makes it just capable of being turned on a 50-ft. table.

This compact design involves a load of 21 tons on each of the two driving axles, the heaviest on the Southern until the coming of the big Merchant Navy Pacific engines, which carry 21 tons on each of their three pairs of coupled wheels. The engine weight in working order is 67 tons, or with tender 109 tons. Construction was spread over the years 1930-35.

It was a happy thought to name the new engines after well-known schools, many of which are on or near the Southern system, and to announce them from the first as the Schools class. Wherever possible and desired, the appropriate engine was

sent when new on exhibition to the town or nearest suitable station concerned, so that the masters and boys could inspect "their" engine and indeed in many cases clamber on it to their hearts' content and ask numerous questions!

When new the Schools were painted olive green, then the standard shade for

the enginemen's vision; steam powered sanding apparatus close to the rims of all four coupled wheels, which is a great help to starts on gradients and towards reducing wheel slip; and disc instead of spoked wheels on the tender. More recently 21 of the 40 have been provided with Lemaitre multiple jet blast pipes, under large chimneys that are easily distinguishable at sight, and which produce a much thinner exhaust note, as on other classes so constructed.

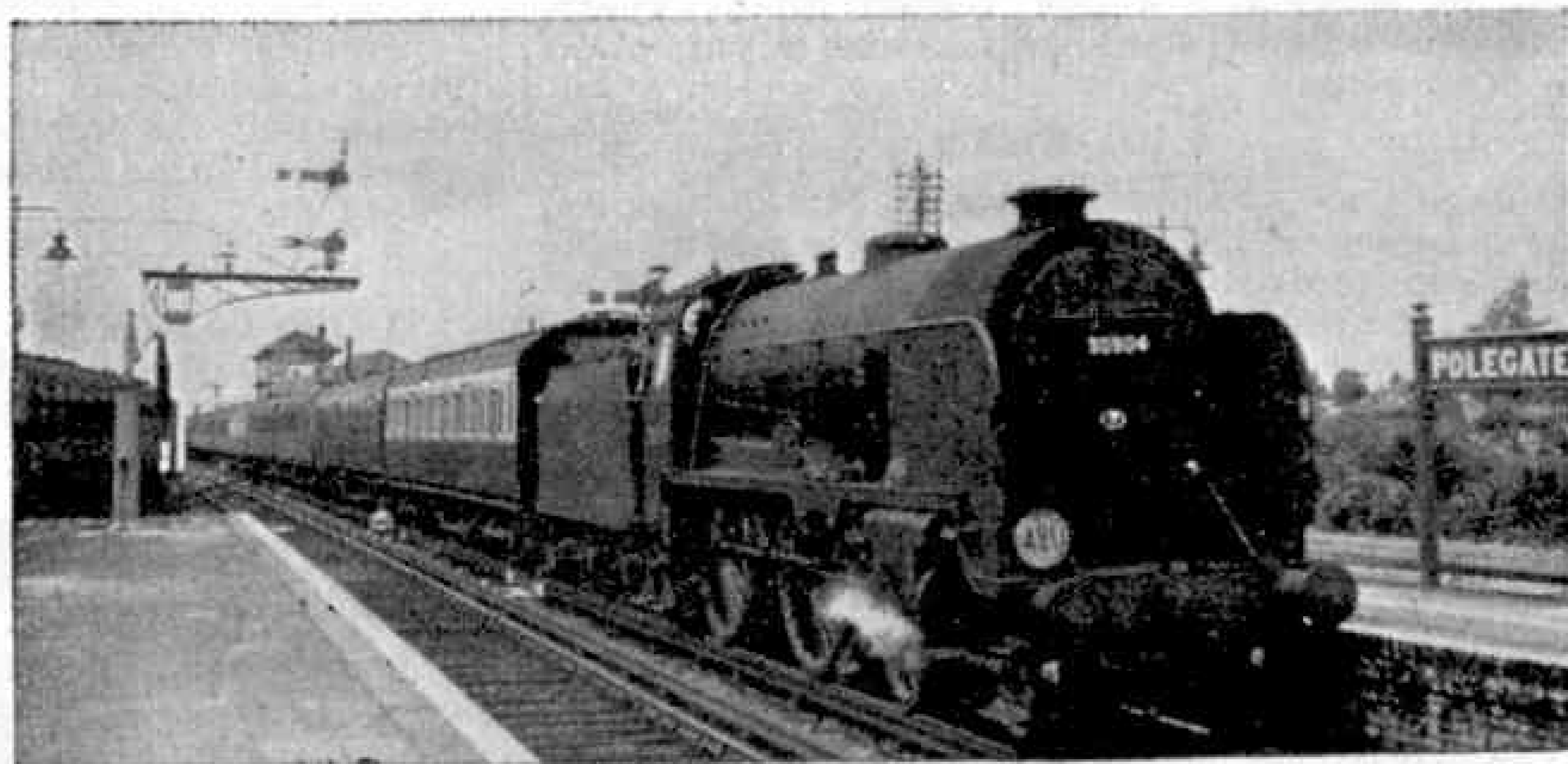
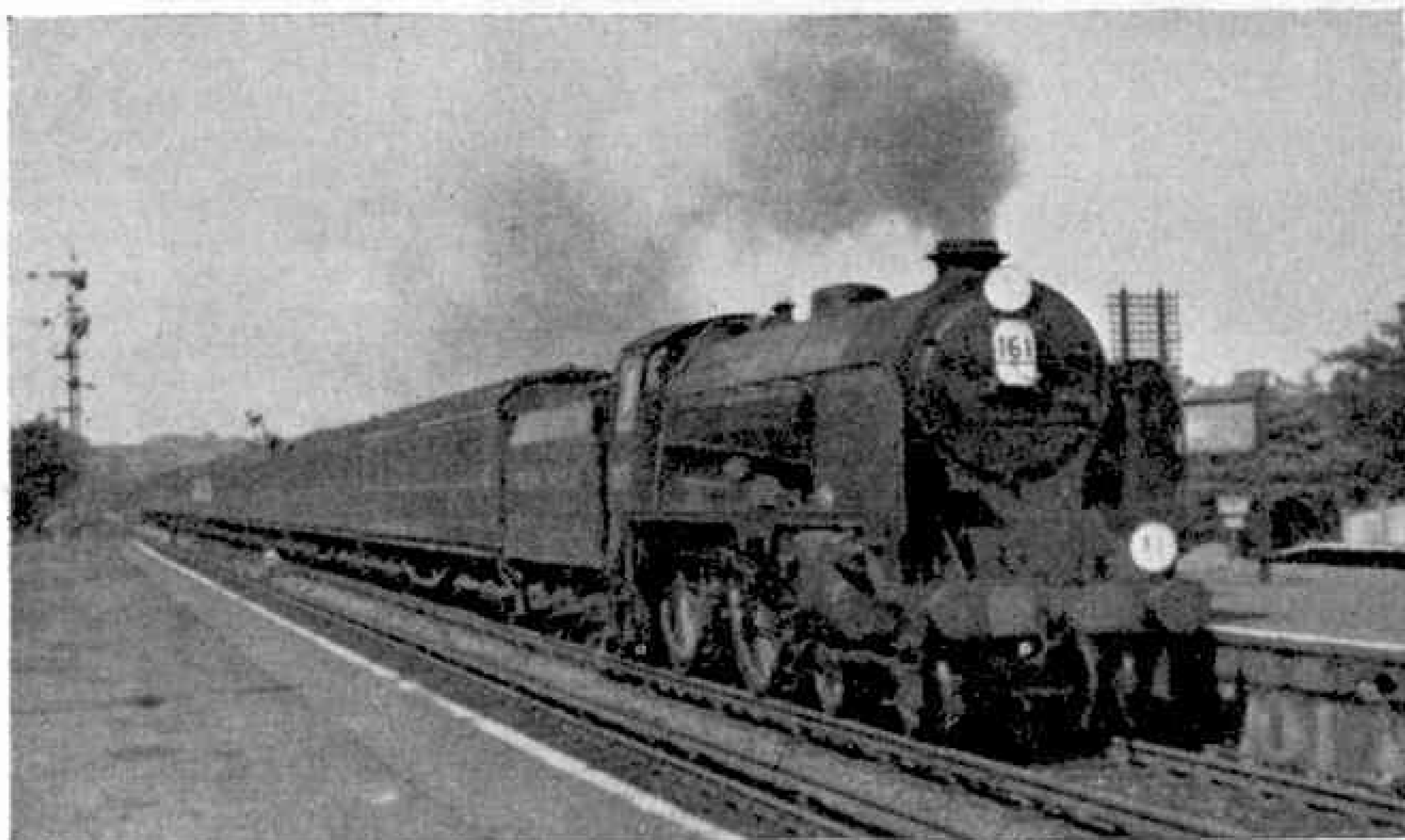
After trials on the Western Section the early Schools began work on certain Kent Coast expresses. My first run, non-stop from Folkestone to London behind *Wellington*—afterwards for many years one of the hard working group stationed at St. Leonards-on-Sea, Hastings—was decidedly the fastest I had then recorded on the S.R. Eastern

S.R. passenger engines and similar to the earlier colour scheme of the London and South Western.

Some received a light malachite green finish in the later 1930's, with large yellow lettering and numerals, a colour scheme that was very attractive when clean and fresh looking. In war conditions dull black was the rule and now, although still performing important express duties, they appear in the lined black mixed traffic or secondary livery. In their early years, like all Southern and some other locomotives, they had their numbers in large figures on the tender, instead of on the cab side sheets as now. The original engine numbers, 900-39, were altered by British Railways in 1948 to 30900-39.

Additions to their equipment have included the fitting of smoke deflectors on each side of the smoke-box, to aid in lifting smoke or exhaust steam clear of

Above No. 30928 "Stowe" is seen climbing through the London outskirts on a down express. Photograph by D. L. Bradley. In the illustration below, from a photograph by S. C. Nash, No. 30904 "Lancing" is passing Polegate Junction near Eastbourne on a W.R. Midlands to Sussex summer express.



Division, and a foretaste of things to come! Track refitting had been sufficiently completed on the opening day of the new station at Hastings in July 1931, when *Lancing* inaugurated their long and successful reign, which still continues, as the principal and essential motive power for the direct London-Hastings trains. From Hastings they also work to Ashford, and to Brighton in summer, as well as on London to Kent (Continued on page 342)



Avro Ashton, with its four Rolls-Royce Nene engines supplemented by two Bristol Olympus turbojets in pods under its wings.

now moves one-quarter of the yearly output of its 250 ponds by air to all parts of the United States and Canada.

Western Airlines, who carry the fish, found that controlling the water temperature and air pressure during flight presented few problems; but packing was difficult. They finally evolved the

technique of placing the fish in fresh water in special plastic film bags and then sealing them in. After that the bags are packed in insulated containers, and the fish travel as comfortably as you and I in our armchairs.

Air News

By John W. R. Taylor

First British Six-Jet Aircraft

Although they receive very little publicity, the six Avro Ashtons bought by the Ministry of Supply for high altitude research are among the most useful aircraft in the sky. Secret blind and visual bombing techniques that will be used by the R.A.F.'s V-bombers have been tested in Ashtons. Now one of them has been modified to carry two Bristol Olympus turbojets in pods under its wings, outboard of the normal pairs of Nene engines. The result, illustrated above, is the first British six-jet aircraft and should have a high performance, as the standard Ashton can cruise at 406 m.p.h. for 2½ hrs. at 40,000 ft.

From the length of the Olympus pods, it seems certain that they are fitted with afterburners. So the installation lends interest to American reports that Avro are developing a new version of the Vulcan bomber, with its Olympus engines slung in pods under the delta wing.

A.T.C. Gliding

Despite poor summer weather, 1954 was the best year so far for the gliding activities of the Air Training Corps, which retains its position as the world's biggest gliding organisation. Altogether, A.T.C. cadets made 99,575 launches, logging 7,497 hrs. in the air and gaining 1,546 proficiency certificates. Nearly 16,000 boys are eligible to fly in the Corps' gliders, and 45 week-end gliding schools throughout the United Kingdom are kept busy providing facilities for them.

Flying Fish

The largest goldfish farm in the world, near Long Beach, California,

A newly-completed Boeing B-52 Stratofortress just off the assembly line, in a night production move at Boeing's Seattle, Wash., plant. Photograph by courtesy of Boeing Airplane Company, U.S.A.

Stratofortress Production

Less than a year after the first production B-52 Stratofortress was completed in Boeing's Seattle factory, this eight-jet 350,000 lb bomber is coming off the assembly line there in fair numbers, with another production line well under way at the company's Wichita, Kansas, division.

To handle final installation of equipment and flight testing of the 600 m.p.h. B-52s, Boeing and the U.S.A.F. have built a new £3½ million test centre at Larson Air Force Base, Moses Lake, about 140 miles east of Seattle. From there, the first production B-52s will go to the 93rd Bomb Wing at Castle Air Force Base, Merced, California. Meanwhile, their entire undersurface is being given a coat of reflective paint, to protect their crews against the effects of heat radiation from the atomic and hydrogen bombs the aircraft are designed to drop.

Flying Minesweepers

The U.S. Navy is experimenting with helicopters as flying minesweepers, in the Gulf of Mexico. Tests have shown that the 'copters can drag standard sweeping equipment behind them without any danger of being blown up.

* * *

A side-by-side two-seat training version of the Hawker Hunter jet fighter is being built as a possible successor to the Vampire at R.A.F. Flying Training Schools.





This Super Constellation of Northwest Orient Airlines, U.S.A., is the first civil air liner to be fitted with wing-tip fuel tanks to increase its range on scheduled services. It is shown taking off on a test flight.

Tip-Tanks for Air Liners

The Northwest Airlines Super Constellation shown above is the first civil air liner ever fitted with wing-tip fuel tanks to increase its range on scheduled services. Previously, tip-tanks had been carried only by military aircraft and a few privately-owned machines.

The tanks each hold 600 gal. of fuel, and will be used also on the eight new Model 1049G Super Constellations ordered by Deutsche Lufthansa, the German airline. Others will be fitted on Super Connies operated by K.L.M., Air France and Trans World Airlines.

Crash Barriers Ashore

For many years crash barriers have been used on the decks of the Navy's aircraft carriers, to stop aeroplanes that have overshot the arrestor wires. The same idea is now being used ashore with excellent results.

Typical is the case of Lt. Leimbach of the U.S.A.F., who radioed to ground control recently that the brakes of his Thunderstreak fighter-bomber had failed. A nylon barrier was immediately stretched across the runway, and although the aircraft hit this net at 150 m.p.h., it was brought to a standstill in only 600 ft., without injury to the pilot.

Famous Trainer "Retired"

The "buzz-saw" drone of the North American Harvard will soon be a rare sound in British skies, because the last of these famous trainers has been withdrawn from service at R.A.F. Flying Training Schools. In future, all pupil pilots will receive their

basic instruction on the piston-engined Provost, and their advanced training on the Vampire T.11 jet two-seater. But a few Harvards will remain in service as squadron "hacks", and others will continue bombing operations against the Mau Mau in Kenya.

Altogether 3,000 Harvards were delivered to the R.A.F. and, since they entered service in December 1938, tens of thousands of pilots have qualified for their "wings" on these little two-seaters, including H.R.H. the Duke of Edinburgh. Most people will remember the Harvard for the noise of its 550 h.p. Wasp engine and fast-revving metal propeller. Flying instructors will remember it rather as a sturdy, reliable and easily-maintained aircraft, with good performance and manoeuvrability, yet not so easy to fly that the weaker pupil's faults could pass undetected.

Mountaineering by Helicopter

A French SO.1221 Djinn helicopter, carrying two people, made the first-ever landing on the summit of the 13,671 ft. Jungfrau mountain on 3rd March. Piloted by Jean Dabos, it also landed on the neighbouring 13,456 ft. summit of the Mönch, to demonstrate its suitability for reconnaissance, liaison, rescue and other duties in mountainous regions.

The two-seat Djinn is powered by a Turbomeca Palouste air compressor, which turns its rotor by ejecting compressed air from the tips of the blades, just as a garden sprinkler is whirled round by water pressure. Weighing 1,550 lb. fully loaded, it will fly for 100 miles at 44 m.p.h. A production batch is being built for the French Army and civil operators.

Parachuting at Ground Level

The British Martin-Baker company have developed an ejection seat which enables a pilot to escape by parachute even if his aircraft is at ground level. During tests, a dummy pilot was ejected from the rear seat of a Meteor while the aircraft was travelling at 115 m.p.h. along the runway of an airfield.

Although it offers unprecedented safety for pilots of low-flying aircraft, such as ground attack fighters, the new seat weighs only 66 lb. This is about two-thirds of the weight of the firm's earlier ejection seat, which is standard equipment in R.A.F. jet aircraft.



The French SO. 1221 Djinn helicopter that recently landed on the summit of Mt. Mönch, 13,456 ft. high. It is shown here flying past a snow-capped mountain peak.

Cargo Submarines Under the North Pole

By Frank Illingworth

THOUGHT is being given in the United States and the Soviet Union to the building of cargo submarines designed to ply on regular sea lanes *under* the grinding icebergs and pack ice of the polar regions. It is, indeed, quite probable that within a comparatively few years submarine merchantmen will be operating between Europe and Asia beneath the once almost impenetrable ice of the North Polar Basin. This new idea in shipping seems particularly possible of fulfilment since the American development of atom-driven submarines.

We know that the distance between, for example, Liverpool and Yokohama is 11,000 miles via Suez and 12,500 miles by way of Panama, compared with only 6,000 miles under the ice fields of the Arctic. The latter route would offer a saving of 60 days on return trips. There would also be other advantages in under-ice

copper, iron, coal, oil, salt, timber—it's all there in almost unlimited quantities. But how are these to be got out? One answer is by means of cargo ships that can pass *under* the ice and surface *through* the ice in an emergency."

And of course the development of marine short cuts between Europe and the Far East via the Far North would prove even more valuable than new under-ice routes between Siberia and Arctic America; for they would effect *world* trade.

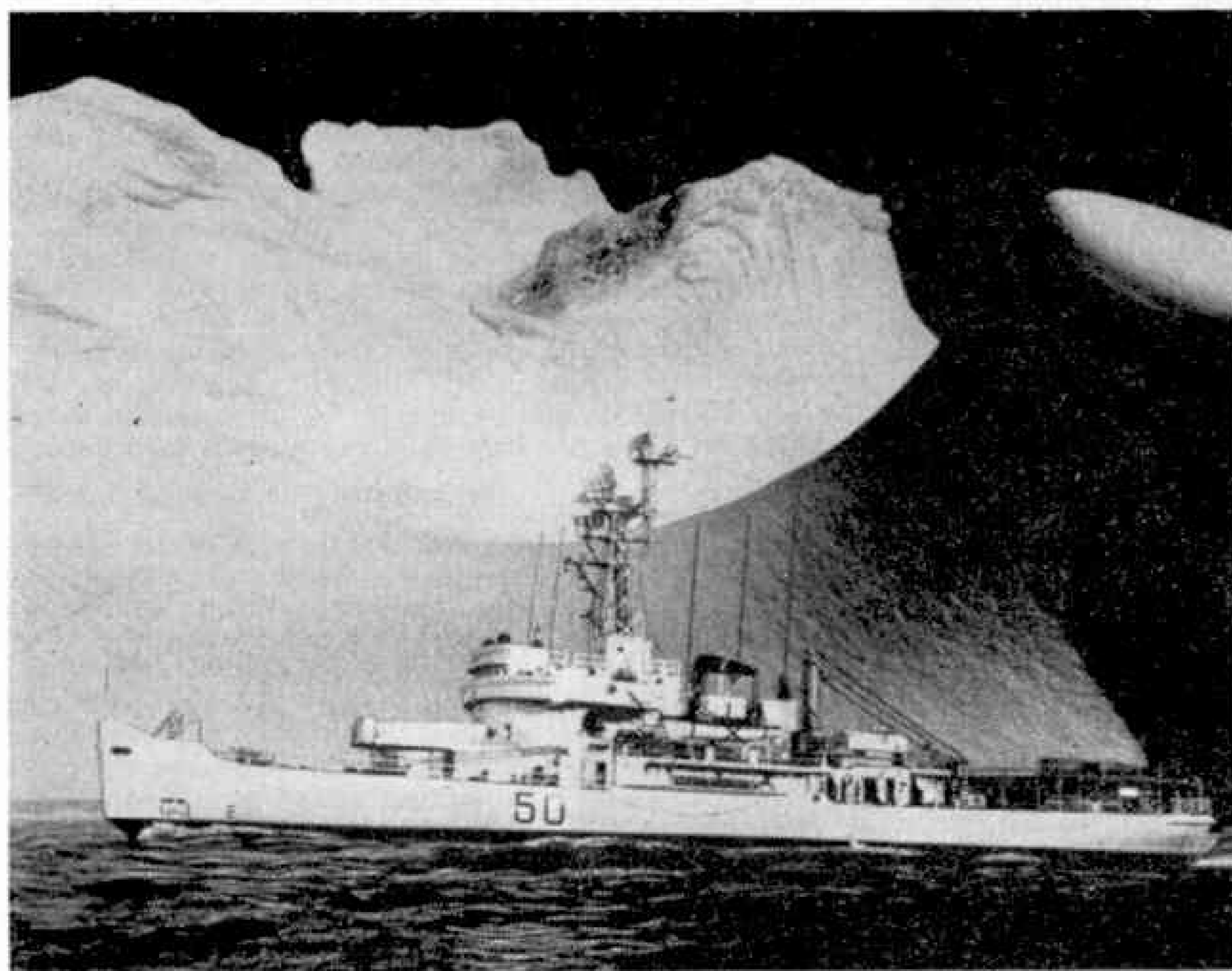
Who are the men who think in terms of new sea routes under the surging ice of the Polar Basins? One is Sir Hubert Wilkins, the famous explorer and scientist. Time and again he has stressed the value of trans-polar submarines, and his views are based not on theory but on practice, for he "sailed" beneath polar ice in 1931, when he got to within nine degrees of the North Pole itself. His most recent comment

was made this last spring when he gave a newspaper correspondent to understand that there was a firm future for under-ice submarines.

Meanwhile, three Russians have evolved an interlocking plan for submarines to ply at up to 20 knots beneath polar ice. They are the explorers and polar specialists Zubov and Tarassov, and Schmidt, the man responsible for establishing a new marine route between the extreme western and eastern regions of Arctic Russia, along the Soviet coast line from Murmansk to the tip of Siberia opposite Alaska.

These three have said that submarines operating on trans-polar shipping routes would have to be fitted not only with equipment designed to reduce the impact of rising beneath frozen sea, but also with apparatus to melt a way through it in an emergency.

Well before the war, blue prints had been



The new Canadian ice-breaker "Labrador," the first ship to make the North West Passage from east to west.

trade across the Polar Basin between the Arctic coast of North America and that of the Soviet Union, two of the richest mineral areas of the world. Sea ice has long proved a barrier to the development of the world's more northerly areas. As one writer has put it: "*Gold, uranium, ores,*

worked out for emergency rescue dromes along any new trans-polar marine routes that might be developed. They were to include amphibious rescue "tanks," meteorological stations, supply bases and ice-breaker depots with helicopter-carrying icebreakers. They were shown on the map at key points along the edge of the Arctic coast-lines, and also along that of the

dreams grew into cigar shaped vessels, one of which, the "*Argonaut*," made a 1,000-mile trip between New York and Norfolk (Virginia).

More recently Lake designed an underwater merchantman with a carrying capacity of 7,500 tons and a maximum submerged speed of 20 knots; and remember—that was before the atom was harnessed to provide a new and immensely greater form of power than Lake knew.

I have already remarked that Sir Hubert Wilkins demonstrated the practicability of "sailing" under sea ice as long ago as 1931. In that year he set out in the *Nautilus* (once the P12 of the U.S. Navy) with a crew of twenty-two and the intention of reaching the North Pole by diving under the heavy ice that encompasses it. He got to within nine degrees of his objective; and when war broke out the £30,000 fund opened to build him a special polar submarine was mounting steadily.

That a submarine can be used as a merchantman was proved by the transport of war materials by British, American, German and Japanese submarines during the war. Germany and Japan used them to exchange vital war material, and Britain and the U.S.A. to supply the beleaguered garrisons of Malta, the Dodecanese and the Philippines. Exponents of underwater "tramps" also point to the

(Continued on page 342)



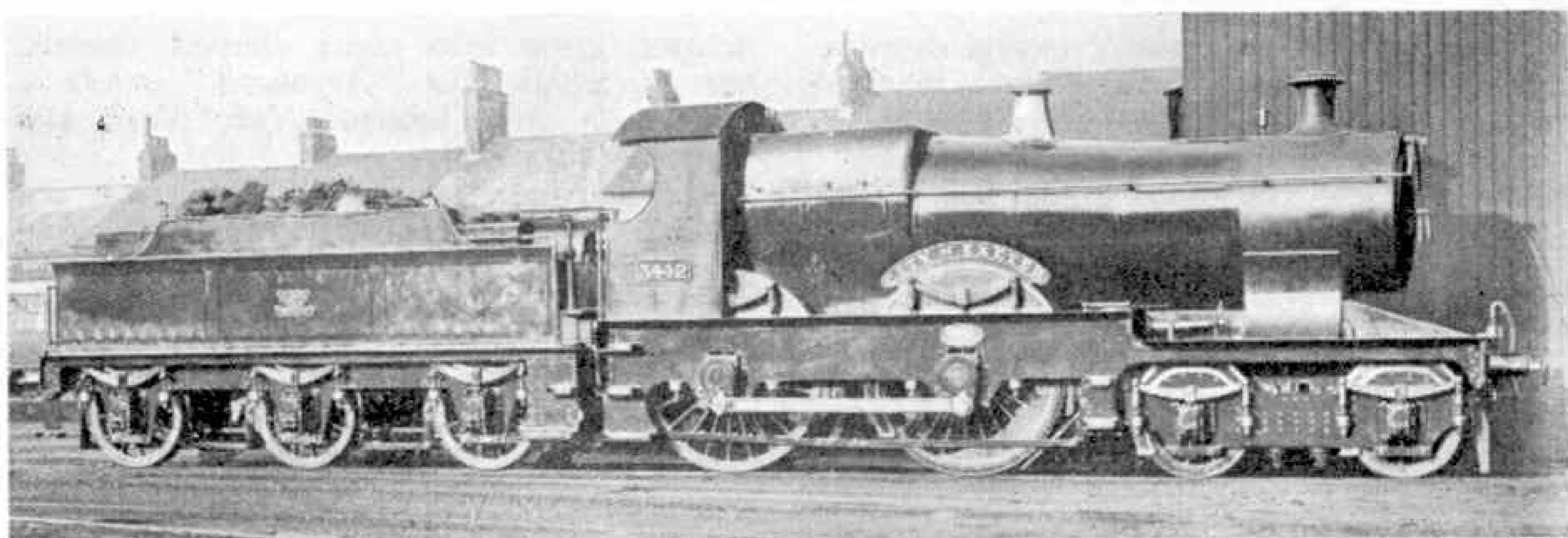
Russian mines at Grumaut, Spitzbergen, where there is a major Russian coal mining port on Ice Fiord.

Ice Barrier. Tarassov also designed a sphere with which, in the last emergency, men, dogs and sledging equipment could be shot to the surface from a doomed cargo vessel, the sphere melting its way through surface ice where this proved an obstacle.

The idea of cargo submarines has indeed travelled a long way since the American marine engineer, Simon Lake, published plans for a ship that would sail under the surface. That was 60-odd years ago, and, not surprisingly, the world dubbed Simon Lake a little queer in the head. But Lake's



Helicopter operating off the Canadian Arctic ice-breaker "C. D. Howe."



Fifty Years of Western Express Running

By the Editor

LOCOMOTIVE performance on the Great Western Railway and its successor, the present Western Region, has long been a source of the most intense interest. During the 50 years covered by this book* the work of these locomotives has varied from the ordinary to the brilliantly spectacular. Now the Region is on the crest of a wave in main line performance, and for this reason Mr. Nock's story of express running on the Western is very timely.

The first thing that impresses one on glancing through the book is the enormous amount of solid material it contains in the way of timed runs. Mr. Nock himself has timed many trains over various sections of the Region, and he has been able to make use of runs timed by Mr. A. V. Goodyear, of Kidderminster, an enthusiast who compiled a very extensive collection of logs dating back to 1904, and by others, including the great Rous-Marten, who in 1904 recorded but kept secret the supposed achievement of 102.3 m.p.h. by *City of Truro*.

Mr. Nock's very intensive use of logs is perhaps the best way of demonstrating with certainty the capacities of the locomotives with which he deals, and for this reason it is difficult to find fault with the number in his book. But at times the reader has a feeling that his progress through the book is somewhat stereotyped. I suppose much depends on whom the

book is intended for, but I cannot help feeling that the general reader—and there are very many of these who are always eager to follow the fortunes of locomotives and railwaymen—would have found the book brighter with a smaller ration. The book would not have been any less entrancing for confirmed locomotive enthusiasts.

Let me add that this is a minor complaint. There are many good things in the book, from the time during which the typical G.W.R. engine was being developed and was lifting the G.W.R. out

of the doldrums into which British railway speeds had fallen as the century opened, to the present era, in which accelerations and vigorous running on

the part of such trains as *The Bristolian* have brought the Region to the top of the list again. In the first section the story of the Ocean Mails in the opening years of the century provides real thrills, the culmination of which was the brilliant performance of *City of Truro*, to which I have already referred, on 9th May 1904.

Next the author turns to the development of new locomotives by Churchward. His boiler was coned forward, so as to give increased water space at the hottest part, with ample steam space above it. His fire-box was tapered towards the back, both in plan and elevation, with its sides very carefully curved, and the ample steam space allowed the traditional dome to be discarded. The result of this, as Mr. Nock clearly shows, was that the new boilers steamed freely, and provided the pattern followed in Great Western

Above is "City of Exeter," a typical Great Western 4-4-0 of the early 1900s. This illustration, reproduced by courtesy of P. J. T. Reid, is typical of the interesting subjects found in "Fifty Years of Western Express Running."

*"Fifty Years of Western Express Running," by O. S. Nock, B.Sc., M.I.C.E., M.I.Mech.E. Published by Edward Everard Ltd., Price 25/-.

practice for practically the whole of the period dealt with in his book. There were also the special features of the valve motion designed by Churchward, whose work in this field greatly influenced practice on other British railways. These and other characteristics of Churchward's locomotives are well explained by the author, who also gives examples of the work of the earlier ones in the long series, relating their fine performance to the outstanding features of design. Among other merits, they had the capacity for free and speedy running, due to the excellent design of valve and steam passages.

The *Cities* were the first class definitely to have these Churchward characteristics, and we follow the development of the design through the County, Star, Saint, Castle and King classes. When we arrive at the end of Mr. Nock's story we have a complete appreciation of the merits of all of them.

There are many highlights in this progress—new routes shortening the road to the West and the line to Birmingham, for example, and the dramatic achievements of the *Cheltenham Flyer*, the speed of which between Swindon and Paddington aroused so much appreciation and enthusiasm in the years before the outbreak of the second world war. Automatic train control, the contribution of the G.W.R. to safety, is dealt with, and it is made

clear that it also ensured better running in fog and other troublesome conditions.

Finally we come to the Western Region today and the classic series of experiments, on the road and at Swindon, that led to improved running of Kings and Castles, with the resulting revival that has brought the Western once again



"The Bristolian" of pre-war days in Sonning Cutting. The engine is No. 5056 "Earl of Powis." This and the photograph below are by M. W. Earley.

to the fore. This took the form of remarkable accelerations introduced last year over nearly every part of the system, based upon the immense capabilities of the Swindon 4-6-0 locomotives, and Mr. Nock writes of two personal memories of the thrilling way in which these higher speeds made their appearance in the timetables, his story ending indeed with fireworks. The last words concern the present record of 217 min. for the run of the Ocean Mails, the trains so prominent in the great G.W.R. performances of over 50 years ago; and Mr. Nock then goes on to point out that the engine holding this record is well-named—*Isambard Kingdom Brunel*.

The book is well produced, easy to read and well illustrated with eight colour pages and a very large number of half-tone plates. In addition to the logs there is also a goodly selection of tables giving locomotive details.



A King running vigorously on an up Birmingham Express near Seer Green. The engine is No. 6008, "King James II."

CLOWNS with WINGS



By
Garth
Christian

THERE were three of them for dinner—and they all ate off the same plate. Two of the diners were cats. The third was a bird. That the cats allowed the bird to feed with them without harm was not surprising to those who knew something of the bird's character. For he was a jackdaw, who lost no time in making himself "King of the kitchen."

The jackdaw was found by 14 year old Nobby Muddle of Chailey, Sussex, after it had been injured, and rapidly became quite tame. He stood no nonsense from a mere cat! Only after he had had his fill did the cats dare to eat the best lean meat; if they interfered before they received a fierce peck in the back.

The meal over, the jackdaw might play with the cats, tempting them to chase him, only to dart back over their heads and pull their tails. When the jackdaw was joined by a companion the second bird would attract the attention of the cats while the other bird dropped down behind them and tweaked their tails. No one watching these jackdaws at play could doubt their possession of a sense of humour.

This same boisterous love of play is seen in the wild jackdaws' aerobatics about the sky. It is revealed, perhaps, in the mathematical skill of those jackdaws that distinguished biologists like

King of the kitchen! The jackdaw seen in the illustration above is a good companion to the friend who found him injured and took care of him. He dines with the cats, over whom he rules despotically. Photographs by M. Littledale, Bournemouth.

Dr. Konrad Lorenze have taught to count, the birds learning by a system of rewards and penalties to distinguish the numbers up to six or seven.

It would be a mistake, perhaps, to ascribe the jackdaws' well-known habit of pilfering and hoarding food to this sense of fun. I have watched nuthatches retrieving food—bread and fat—which they had hidden in a tree and fence the previous day; rooks have been seen deliberately burying acorns; and even tawny owls have been known to hide a store of food.

The jackdaw does not always have an easy life. He is hated by poultry keepers for seizing food intended for the fowls, persecuted by gamekeepers for eating the eggs and young of game birds, and disliked by many naturalists for the harm done to the small song birds. That they remain so numerous is a tribute to their adaptability. Wherever men thrive and insects flourish, there you may expect to see these lively and intelligent birds.

Church towers and belfries they obviously regard as ideal nesting sites. Birds must look upon these buildings as giant cliffs, similar to those in which most of their ancestors and many of their kind today have built their homes. If the sticks that jackdaws carry to their nests fail to fit the site, they are just dropped on the

ground while the bird flies off for shorter sticks—with the result that one church verger claims to have kept his own and the Vicarage fires burning through half a winter with sticks dropped by the jackdaws.

Many jackdaws lay their four to six pale greenish or spotted brownish eggs—occasionally only two or three eggs are laid—in quarries, holes in trees or even in a rabbit burrow. They have a liking for using the old nests of rooks, crows and magpies, and occasionally build an open nest of sticks in a tree without utilising the nesting material of other members of the crow family.

Many townsmen motoring through the countryside must be familiar with the spectacle of jackdaws riding on the backs of sheep as they feed on the animals' ticks. The sheep seem to welcome their presence. I have seen a Southdown ewe pause with obvious satisfaction while a jackdaw, having searched her back for ticks, proceeded to "shave" her head and face.

Jackdaws, it is clear, are not faddy about their food. Besides eating ticks, earthworms, young birds and eggs, they share the taste of a famous naturalist who was once seen in a London bus to

and swallowed. The jackdaws would have understood why. And they are no less keen on the tiny white, round eggs of



Above are two proud owners of a jackdaw they have reared by hand, and below is our old friend being given a tit-bit.



swallow a spider. The spider descended from a bunch of flowers which a woman passenger was carrying; to the astonishment and horror of fellow passengers, the naturalist seized it, cast it into his mouth

spiders. They like mice; they enjoy millipedes and woodlice; and I have never yet owned a walnut tree that

did not lose all its fruit to jackdaws or rooks before the summer was out. These birds are equally keen on cherries.

No wonder these small, cheeky members of the crow family are not always regarded kindly by man. Yet I would be sorry not to hear each day their loud "chak-chak" cries as they fly with fast wing beats across the countryside to their nests in the shelter of a rookery.

A few years ago the scientists would have been shocked at the claim that jackdaws have a sense of humour. Only in recent years have ornithologists acknowledged that birds really do indulge in play. Today, watching the blue tits chasing the willow warblers—a habit to which they are remarkably prone—or seeing the blackbirds indulge in some form of "tag" about the garden, or observing the swallows dropping feathers from the sky and swooping down and catching them, as Miss Len Howard has recorded, no naturalist would be surprised at the claim. Even the most cautious and critical scientist would admit that jackdaws display a sense of fun which warrants their reputation as "Winged Clowns."

Railway Notes

By R. A. H. Weight

The Changing Locomotive Scene

Variety is the spice of life, and there is plenty of it in the locomotive and motive power scene on British Railways to-day, as several features in this issue demonstrate.

Turning first to new locomotives lately placed in traffic, I have the following details to announce: W.R. small 0-6-0Ts numbered and allocated: Nos. 1658, 82C, Swindon; 1659, 87G, Carmarthen; 1660, 84J, Croes Newydd (North Wales); 1661, 85D, Kidderminster; 1662, 85A, Worcester; 1663, 84H, Wellington (Salop); and 1664, shed not yet announced. Large pannier tank built by the Yorkshire Engine Co. Ltd., numbered 9498 is to be stationed at 84E, Tyseley.

B.R. class 3 2-6-2Ts have been completed, numbered 82035-7; 0-6-0 diesel electric 350 h.p. shunters received from Derby Works included Nos. 13102-4, shedded at 86E, Severn Tunnel Junction; 13105-10, 84C, Banbury; and 13111, 84G, Shrewsbury.

Class 9 2-10-0s, continuing a Crewe order, have gone to 15A,

The platform is deserted, the passengers and their luggage have gone. No. 60139 "Sea Eagle" is waiting to trail out of King's Cross behind the empty stock of the up "Queen of Scots." Photograph by R. F. Roberts.

Wellingborough, numbered 92045-9. Nos. 76045-9, class 4 2-6-0s constructed at Doncaster were gazetted to 52A, Gateshead; No. 80104, class 4 2-6-4T ex Brighton to join sisters at 33A, Plaistow; diesel shunters Nos. 13137-9 to 53A, Hull (Dairycoates); and No. 13158 to 40B, Immingham.

Engines destined for scrapping and withdrawn from stock include W.R. 4-4-0 No. 9000, eight of the Swindon type 45xx 2-6-2Ts and eight tanks originally belonging to separate Welsh companies, with 4-4-0 compounds Nos. 41183, 41067, five ex-London, Tilbury and Southend 4-4-2Ts and Midland type 4-4-0 No. 40405. Others are B12 rebuilt Great Eastern 4-6-0 No. 61523, rebuilt D16 Claud Hamilton 4-4-0s, numbered 62531, 62585, Great Eastern 2-4-0 No. 62791, Scottish 4-4-0 D40 old Great North of Scotland type No. 62272 and Caledonian superheated Dunalastair class 3P Nos. 54448, 54457.

There are also a number of 0-6-0 tender as well as various tank locomotives condemned by the London Midland, Eastern, North Eastern and Scottish Regions. Mention must be made, too, of the withdrawal of S.R. 32328 *Hackworth*, the first N15x 4-6-0 so to suffer. The seven engines in this class began as L.B.S.C.R. 4-6-4 express tanks, working principal expresses between London and the Sussex coast prior to electrification.

As No. 46137 *Prince of Wales Volunteers* (South Lancashire), stationed at Crewe North, has been rebuilt with modern taper boiler, all the 70 Royal Scot 4-6-0s are now standardised to the modified design.

The unique 4-6-4 express locomotive No. 60700, formerly No. 10000, stationed at Doncaster after overhaul in Works there, has been running the 10.6 a.m. non-stop express to King's Cross, returning from London in charge of the 3.50 p.m. Leeds train, quite frequently during early spring. Some very fast performances have been reported.

This month's striking cover, prepared from a photograph by Mr. Derrick Ives, depicts an S.R. express serving principal stations between Waterloo and Exeter, with through carriages to Plymouth and Ilfracombe. It passes Sherborne, Dorset, amid pretty scenery and close to the famous Abbey Church and School, hauled by a diesel-electric main line locomotive over a route notable for its sharply changing gradients and its exciting bursts of high speed.

This line has been the scene during the last year or two of considerable trial and regular service running with the "big diesels," including the first two of their kind built for the London Midland numbered 10000-1 and transferred to Nine Elms depot, S.R., later, together from time to time with the Southern's three numbered 10201-3. The latter are rather more powerful, especially the last-built No. 10203. High mileages were run when all was favourable, such as Waterloo-Exeter and back and Waterloo-Weymouth



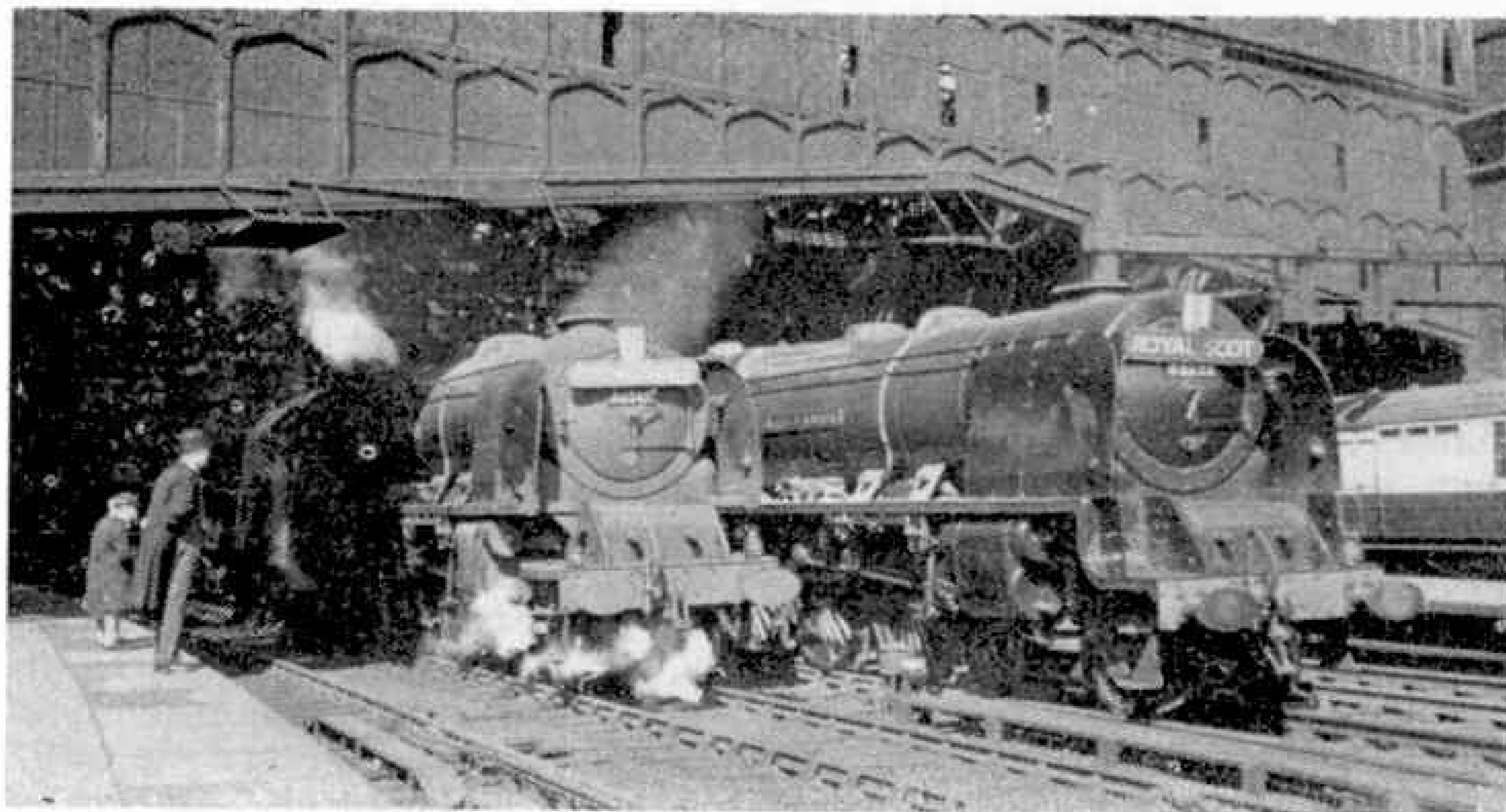
and back twice per 24 hours.

It now appears that these five locomotives have been transferred to the London Midland Region, as representatives of both Regions' types have been noted on main line work to and from Euston, or at any rate loaned for service at Camden and elsewhere. The smaller 827 h.p. similar locomotive No. 10800 began duty from Rugby on Birmingham-Peterborough line trains.

The Easter Holiday Rush

Easter is one of the extremely busy periods for British Railways, particularly as regards the concentrated outward pressure of main line passengers and special trains, combined with the usual business services on Maundy Thursday, the day before Good Friday. This year I toured several London termini for spells of observation and recording during the morning and early afternoon, before travelling south by the S.R. on that day. After preparation of long lists of relief and extra express and other trains with all the attendant special rostering of locomotives, rolling stock and crews, platform allocations and operating schedules, with which officials had been busy for weeks beforehand, things were working smoothly, notwithstanding the pressure of departures or arrivals.

At King's Cross I saw streamlined Pacifics take out the *White Rose*, the 9.45 a.m. Scottish relief and part



This photograph by J. J. Cunningham, a prize-winning entry in an "M.M." Photographic Competition, shows two L.M.R. 4-6-2s, No. 46245 "City of London" and No. 46232 "Duchess of Montrose", at Carlisle, each bearing the attractive Royal Scot headboard formerly in use. A special article on train name headboards will appear next month.

of the 10.18 to Leeds and Harrogate, and arriving early with the Grantham train due at 9.52. There were an A1 on the *Flying Scotsman*, an A3 on the first section and an A2 4-6-2 on the second part of the follow-up 10.5 a.m. express to Glasgow, together with B1 and B17 4-6-0s and a J50 0-6-0T bringing in empty stock.

At Paddington, in just over one hour up to noon, 17 expresses ran in or out, together with many other movements indicative of the high pressure which would prevail much of that day. Motive power for the principal trains included three Kings, nine Castles, one County, two Halls and two Britannia Pacifics, one of which arrived from S. Wales double-heading with a Castle in order to provide an engine for a return special.

Jubilee 3-cyl. 4-6-0s were much in evidence at Euston about lunchtime, including one on the second relief to the *Midday Scot*, which itself was hauled by a City Pacific. The first portion of the 1.35 to Perth was manned by a Carlisle crew on a diesel-electric engine loaded to about 450 tons full. One

Southern No. 31907, a 3-cylinder 2-6-0, at Cranleigh with the 10-coach *Ramblers'* excursion on the occasion referred to in the accompanying notes. Photograph by S. C. Nash.

of the still unnamed Holyhead Britannias arrived. Another, *Byron*, was ready to go out to Manchester. Scots and Black 5 mixed traffic 4-6-0s were taking their share in quick succession.

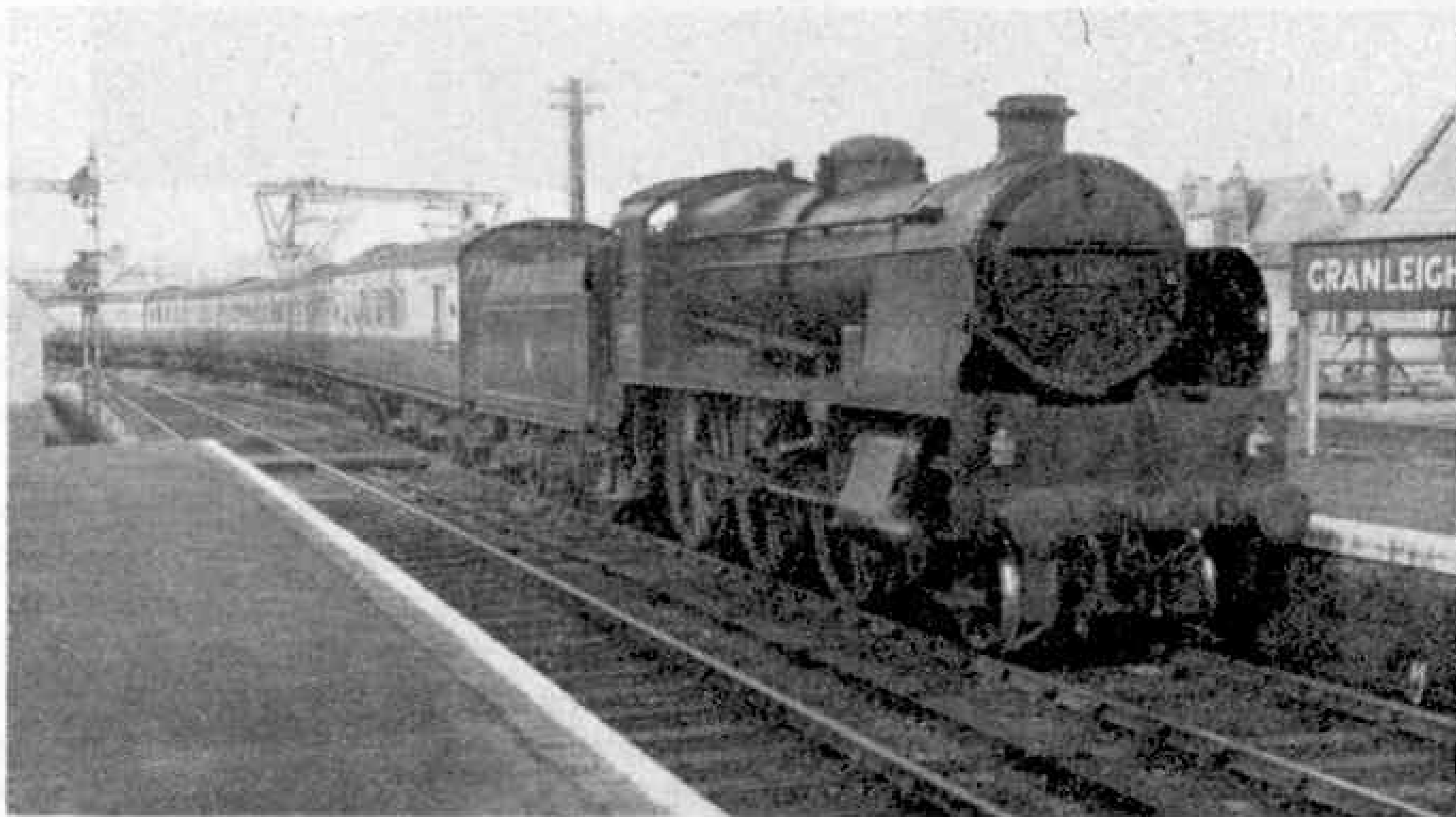
The previous evening I had seen the *Golden Arrow* arrive to time at Victoria, headed by *William Shakespeare*, and on my way down behind a Schools near Orpington *Iron Duke* flashed past with an up Continental in the afternoon. Thus within a short time I had observed two Britannia 4-6-2s each on the Southern, Western and L.M. Regions, and had I gone to Liverpool Street I could doubtless have seen two or more there, all practically alike. Such a circumstance would have been almost unbelievable not many years ago! On the Eastern Division of the Southern there were West country 4-6-2s: King Arthurs; Schools and L1 4-4-0s.

Station Improvements and New Works

The first stage of track widening with complete rebuilding of Potters Bar station has been completed, helping to facilitate King's Cross suburban service and East Coast main line running.

Platform and track improvements are in hand at Norwich, Thorpe terminus. Improved passenger accommodation was brought into use at Yarmouth, South Town terminal, and at the intermediate Grays (Essex) station and elsewhere. At Birmingham (New Street) an improved public address system has replaced the previous loud speaker installation.

Remodelling of the passenger station and marshalling yard is soon to begin at Banbury. Locomotive depots or their equipment have been modernised at Ipswich and Retford. There are many welcome evidences of repainting and smartening up for the summer season.



A Red Letter Day at Cranleigh

The single line erstwhile L.B.S.C.R. branch between Guildford and Christs Hospital, near Horsham, Sussex, is restricted in the ordinary way to a few classes of tender locomotive possessing light axle loads. Its usual pull-and-push passenger trains have M7 0-4-4Ts.

Special permission was given recently for what must have seemed a huge engine locally to work through to the intermediate station of Cranleigh from London by way of Leatherhead and Guildford, with a heavy *Ramblers'* special. These are run periodically to various S.R. country stations.

Two Bells

By John W. R. Taylor

WHEN we talk about the pioneer days of flying, we usually mean the 1903-12 era, the days of the Wright brothers, Santos-Dumont, Curtiss, Farman, A. V. Roe and Bleriot, when every flight was an adventure.

We have come a long way in 50 years—so far that no place on earth is more than a day's journey from London in a Canberra bomber. But we have had to pay a high price for progress.



In those old pioneer days, crashes were merely a part of the process of learning to fly. A few people were killed, usually because their frail stick-and-string aeroplanes broke up in the air. More often, airmen were able to step out of the wreckage, brush themselves down, build another, improved, aeroplane in a few days, and try again.

One reason was that their aeroplanes had what we call a low wing loading. The 1903 Wright biplane, for example, weighed 750 lb., complete with pilot, and had a wing area of 510 sq. ft. Thus, every square foot of wing surface had to lift a load of only $1\frac{1}{2}$ lb. The comparable wing loading of a Stratocruiser air liner is over 80 lb. per sq. ft.

Now, a 'plane with a low wing loading and adequate power can take off very quickly. Its wings develop so much lift, and it weighs so little, that it will leave the ground after a short run, and at quite

a low speed. The Wright biplane reached only 31 m.p.h. in full flight and took off after a run of 40 ft.

By comparison, the average heavily-loaded modern air liner will not leave the ground until it has reached a speed of well over 100 m.p.h., and needs a take-off run of anything up to $1\frac{1}{2}$ miles. As a result, aerodromes like London Airport need two-mile long concrete runways, extending over hundreds of acres of good farming land.

There is an even more unpleasant consequence of high landing and take-off speeds. If anything goes wrong—and the

Vertical Take-off.—A start has been made with helicopters, which are already operating into city centres. Here is one of Sabena's Sikorsky S.55s at Brussels Heliport. Photograph by courtesy of Sabena.

majority of aircraft accidents *do* occur during take-off and landing—the crash at around 100 m.p.h. will obviously be far more

serious than the 30 m.p.h. crash of a lightly-loaded aeroplane.

For years, the late C. G. Grey, famous editor of *The Aeroplane* and contributor to *Meccano Magazine*, pleaded for "aircraft that would land slowly and not burn up in a crash". But the public demand speed, and airlines must make money. The inevitable result is the sort of air liners we have today.

This does not mean that air travel is unsafe. On the contrary. In Australia, which is one of the most air-minded countries in the world, the accident rate is such that if a baby was put aboard an air liner on the day it was born, it could expect to keep flying day and night until it reached the age of 93 before becoming due for an accident.

Nevertheless, designers and scientists all over the world are beginning to turn their attention more and more to ways of dispensing with miles of concrete runway.

The main reason is that they have to ensure that their countries would not be left defenceless if all airfields were destroyed in the early stages of an atomic war; and the results so far are of more use to military aviation than to the airlines. But civil flying is bound to benefit in due course from all the millions of pounds, dollars,

High wing loading. The Boeing Stratocruiser. Photograph by courtesy of Pan American World Airways System.



francs and roubles being spent in research.

The new aircraft that have evolved from this research are often of fantastic shape. Last year we had the Convair XFY-1 and Lockheed XFV-1 vertical take-off fighters, which stand on their tail and climb away vertically, their propellers working like helicopter rotors. Then we had the even more weird Rolls-Royce "Flying Bedstead", which demonstrated a way to take off vertically without all the

Such an aircraft will be the 44-seat Fairey Rotodyne helicopter, due to fly early next year.

Another, which was completed in February of this year, is the American Bell XV-3. It works on entirely different

principles from those of the turboprop-engined Rotodyne, because its two rotors, which are mounted at the ends of 30 ft. span fixed wings, are designed to tilt forward through 90 deg. after take-off, so that they act as forward facing propellers for cruising flight.

Conversion from rotor to propeller is said to be a smooth, gradual operation, taking 10 to 15 seconds. Surprisingly, it has no effect on the 'plane's attitude. In fact, the pilot can stop or reverse the conversion at any point, whilst maintaining steady, stable flight.



The Bell XV-3 Convertiplane, the two rotors of which are mounted at the wing-tips.

complications of sitting on one's tail.

Another type of vertical take-off aircraft—the helicopter—is of course already well established. In its present form, it is tremendously expensive to operate and comparatively slow. But from it are being developed convertiplanes, which will take off as helicopters and convert into semi-fixed wing aeroplanes for cruising flight.

The result is an extremely promising design, because the XV-3 can rise vertically, hover or fly forward, backward or sideways without any difficulty, and can manoeuvre and land in confined areas even under gusty wind conditions. It can, in short, do anything that a helicopter will do, and, as an aeroplane, should have a forward speed of over 175 m.p.h., which is considerably faster than the present international speed record for helicopters.

The four-seat Bell XV-3 has been built

to test the practicability of tilting rotor designs for Army observation, reconnaissance, ambulance, liaison and rescue aircraft, as well as for future large cargo and assault transport projects. It is powered by a 450 h.p. Pratt and Whitney R-985 piston engine, mounted behind the cabin, and is at present undergoing extensive tied-down ground tests before starting its flight testing.

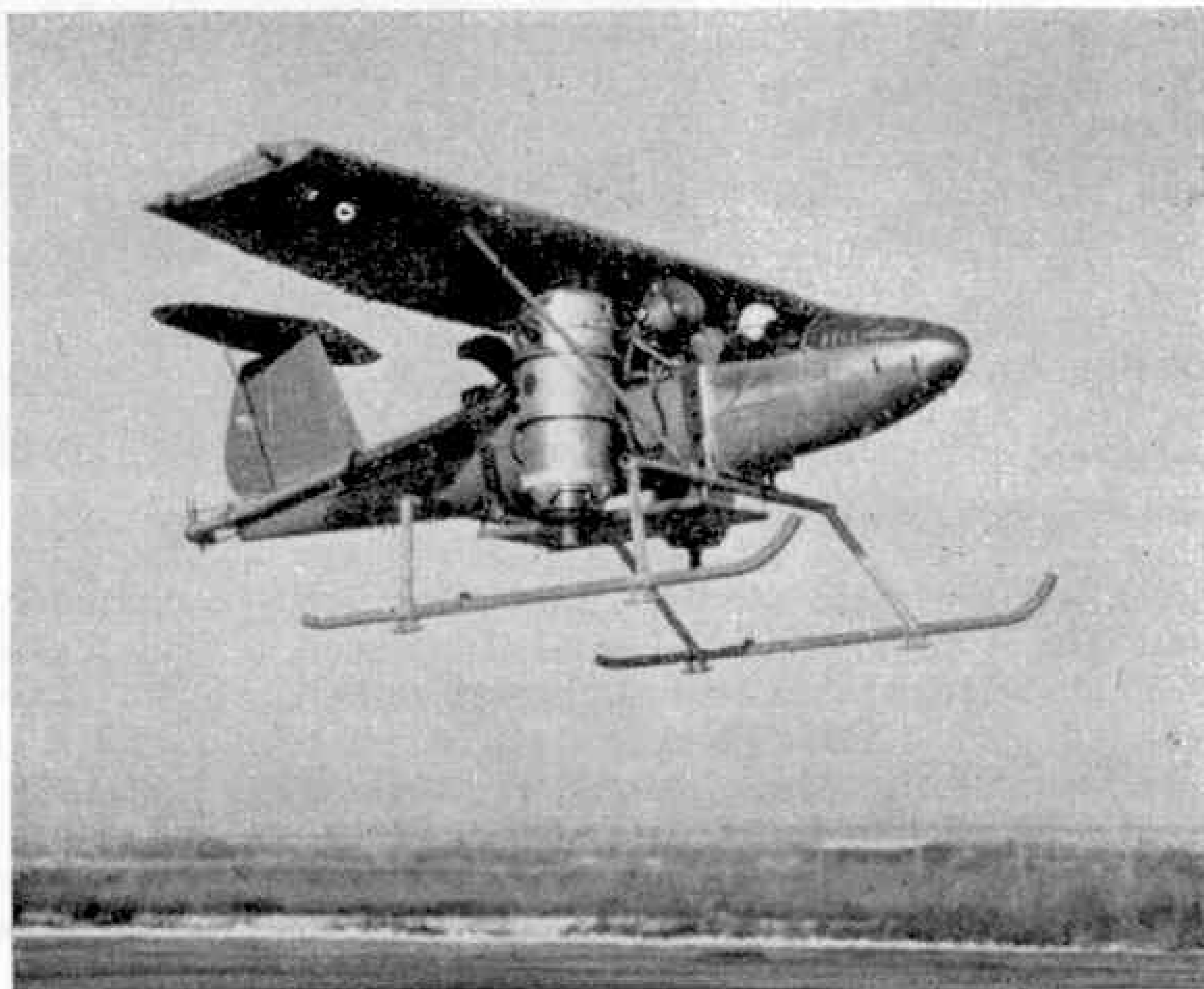
A second revolutionary new Bell aircraft was announced on 3rd February, just one week before the XV-3. It is called the VTOL (vertical take-off and landing) aircraft and works in much the same way as the Rolls-Royce "Flying Bedstead", in that it uses the thrust of a pair of downward-pointing jet engines to raise it off the ground. But, as can be seen from the photograph on this page, it looks far more like a conventional aeroplane than does the Rolls-Royce machine.

The VTOL is a hybrid, with the fuselage of a glider, the wings of a standard lightplane, and the skid undercarriage of a Bell 47 helicopter. It was built as quickly as possible, at the company's own expense, to prove the practicability of direct jet-lift. The only official help concerned the two 1,000 lb. thrust Fairchild J44 turbojets, which were supplied by the U.S.A.F. and are of the type used to power pilotless target aircraft.

Loaded weight of the single-seat VTOL is about 2,000 lb.; it is 21 ft. long and has a wing span of 26 ft. Its big advantage, compared with "tail-sitters" like the XFY-1 and XFV-1, is that its fuselage remains horizontal at all times, eliminating the need for special ground handling equipment and making take-off and landing less uncomfortable for its pilot. After take-off, the engines are simply rotated through 90 deg. to a horizontal position, and the VTOL then performs just like any other jet 'plane, with all its lift coming from the fixed wings.

It was rolled out of Bell's Niagara Falls factory in January 1954, after which its pilot, David Howe, spent several months familiarising himself with its controls and equipment. Not until 16th November did he attempt to lift it off the ground; but the caution was worthwhile, because he found

he was able to master completely the control techniques within 40 sec. of take-off on the first flight. Soon afterwards, he flew the aircraft a distance of nearly half a mile, staying up for two minutes; and he has since made many more successful flights, although he had not attempted to rotate the engines in the air to the horizontal cruising position



Another revolutionary Bell type, the VTOL (vertical take-off and landing) aircraft. It was built to prove the practicability of direct jet-lift.

at the time this article was written.

Control at low speeds is achieved in much the same way as on the "Flying Bedstead", by ejecting compressed air through nozzles at the wing tips and tail, the compressed air being supplied by a Palouste turbine mounted behind the cockpit. To bank to the left, for example, compressed air is ejected from the starboard wing-tip to thrust that wing up. Once a reasonable forward speed has been reached, this system of control gives way to conventional ailerons, rudder and elevators, both systems being worked by normal cockpit controls.

Test pilot Howe finds nothing strange in travelling vertically up and down because, before joining Bell, he spent five years with the Otis Elevator Company, who make and install lifts in buildings. He is also a very experienced fixed wing pilot, having destroyed nine enemy aircraft as a fighter pilot with the U.S.A.A.F. in Europe during the war. Later he graduated from the U.S.A.F.'s test pilot school at Edwards Air Force Base, California. (Cont. on page 342)

MECCANO MAGAZINE

Junior Section

IF all goes well you may hear some time this month that a new water speed record has been set up in Great Britain. The effort to regain this record is to be made by Donald Campbell, in *Bluebird*

and this can be winched in easily, with the tractor held in position either by placing chocks under the rear wheels or by using the fitted sprag.

From the Lake District in Great Britain

let us turn to Canada, this time to see something of a wonderful bird. I am one of those who can see

There was still snow on the Lake District hills when David Brown Tractors apprentice J. B. Sykes demonstrated that his 301C tractor could handle Donald Campbell's jet hydroplane "Bluebird" on its launching cradle.

no sport in killing wild birds, so I am very pleased that Canada is doing so much

today to protect its wild life, and is even issuing stamps to help on with this good work.

Two of these stamps were issued on 4th April of this year. One of them, 4c. in value, shows the Musk Qx; the other, a 5c. stamp, illustrating the Whooping Crane, and I am reproducing this fine stamp so that you can see it. It is a real beauty, and the designer, Dr. William Rowen, is to be congratulated on it.

These are fine additions to Canada's National Wild Life stamps, particularly the 5c. Those who have been able to get them, especially if on first day covers, with a nice cancellation, will be able to make up a beautiful page for their albums, and indeed the whole series would make a very fine show at little cost.



on Lake Ullswater, and at the time of writing this new all-metal turbo-jet hydroplane had already made several trial runs in which speeds of about 150 m.p.h. had been reached. The record to be beaten stands at 178.49 m.p.h., the speed reached by Stanley Sayers on Lake Washington in the United States three years ago.

This gives interest to the large picture on this page, which shows *Bluebird* on the launching ramp, which is 30 yds. long and goes down to the water on a slope of 1 in 15. There is no difficulty in hauling the vessel up the ramp, with its launching cradle, however, for this is done comfortably by the David Brown 301C tractor also seen in the picture. The total load is about four tons,



Easy Model-Building

Spanner's Special Section for Juniors

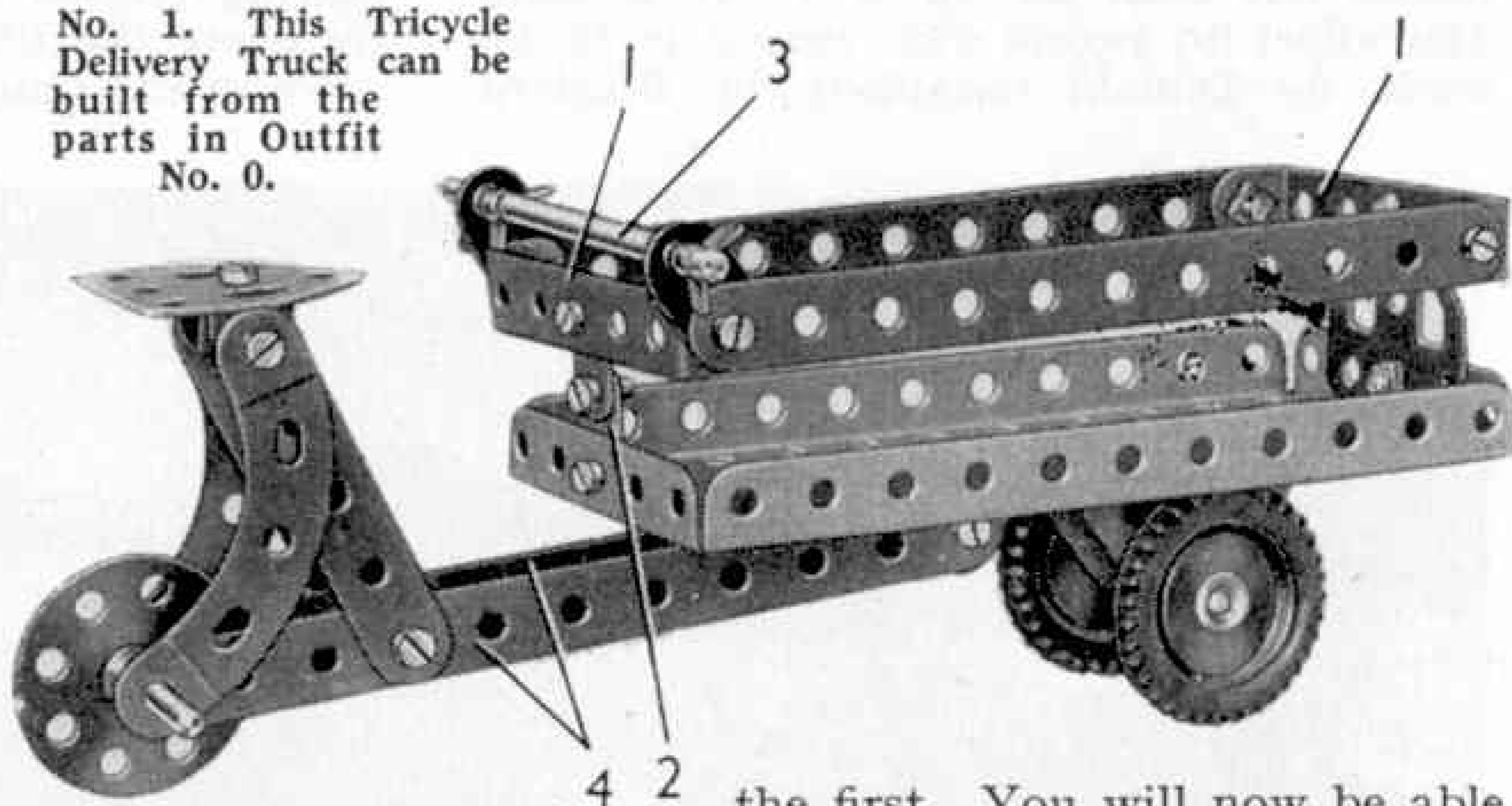
THIS month I have two new models for you. One is a Tricycle Delivery Truck made from parts in Outfit No. 0 and the other is a Helicopter made from Outfit No. 1.

I will deal with the smaller model first. It is shown in Pictures Nos. 1 and 2, and to make the body of this it is necessary to bolt two $5\frac{1}{2}$ " Strips to the lugs of two $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips 1. Next fix one of the Double Angle Strips to a Flat Trunnion and bolt that to the end flange of a $5\frac{1}{2}" \times 2\frac{1}{2}"$ Flanged Plate. Attach a Fishplate to the second of the Double Angle Strips 1 and then bolt it to another Fishplate 2, which you must also fix to an end flange of the Flanged Plate. For the handlebar 3 use a $3\frac{1}{2}"$ Rod. Support it in Fishplates and hold it in place with Spring Clips. Attach the Fishplates to the top rails of the body by the same bolts that you use to fix the $5\frac{1}{2}"$ Strips to the rear one of the Double Angle Strips 1.

You can now build the lower part of the cycle frame. Bolt an Angle Bracket to the front end of each of two $5\frac{1}{2}"$ Strips 4. Now place a bolt through the free holes

of the Angle Brackets and pass the end of this bolt through a hole in the Flanged Plate. Screw a nut on the bolt, but do not tighten it against the Flanged Plate; then screw another nut tightly against

No. 1. This Tricycle Delivery Truck can be built from the parts in Outfit No. 0.



the first. You will now be able to swivel the body to steer the model, and if the two nuts are locked tightly together they will not unscrew.

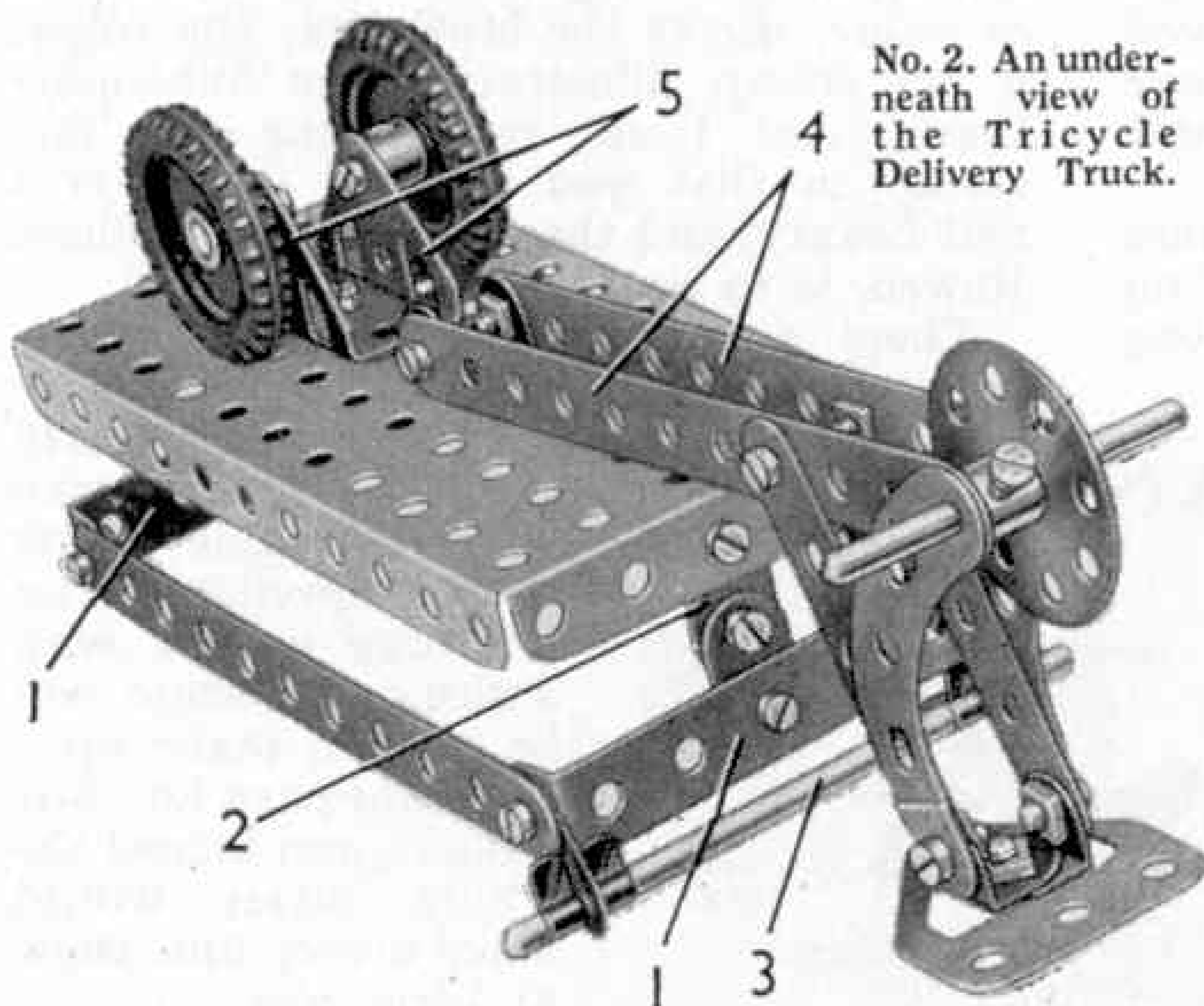
Make the seat by bolting a Flat Trunnion to two Angle Brackets, each attached to a $2\frac{1}{2}"$ Strip and a $2\frac{1}{2}"$ Stepped Curved Strip. Bolt the $2\frac{1}{2}"$ Strips firmly to the Strips 4 and then pass a 2" Rod through the lower holes of the Curved Strips and the end holes of the Strips 4. Fix a Bush Wheel on the Rod between the Strips to form the rear wheel.

Fix each of the two front wheels by its set-screw on a $\frac{3}{8}"$ Bolt passed through the hole at the pointed end of a Trunnion 5. Then fix the two Trunnions underneath the body by one bolt passed through the flange of each Trunnion and through the Flanged Plate.

The parts contained in the Tricycle Delivery Truck are as follows: 4 of No. 2; 2 of No. 5; 4 of No. 10; 4 of No. 12; 1 of No. 16; 1 of No. 17; 2 of No. 22; 1 of No. 24; 4 of No. 35; 19 of No. 37a; 18 of No. 37b; 2 of No. 38; 2 of No. 48a; 1 of No. 52; 2 of No. 90a; 2 of No. 111c; 2 of No. 126; 2 of No. 126a; 2 of No. 142c.

To build the Helicopter shown in Pictures Nos. 3 and 4, begin by gently curving a $5\frac{1}{2}" \times 1\frac{1}{2}"$ Flexible Plate to U shape to make the lower part of the cabin. Then bolt a

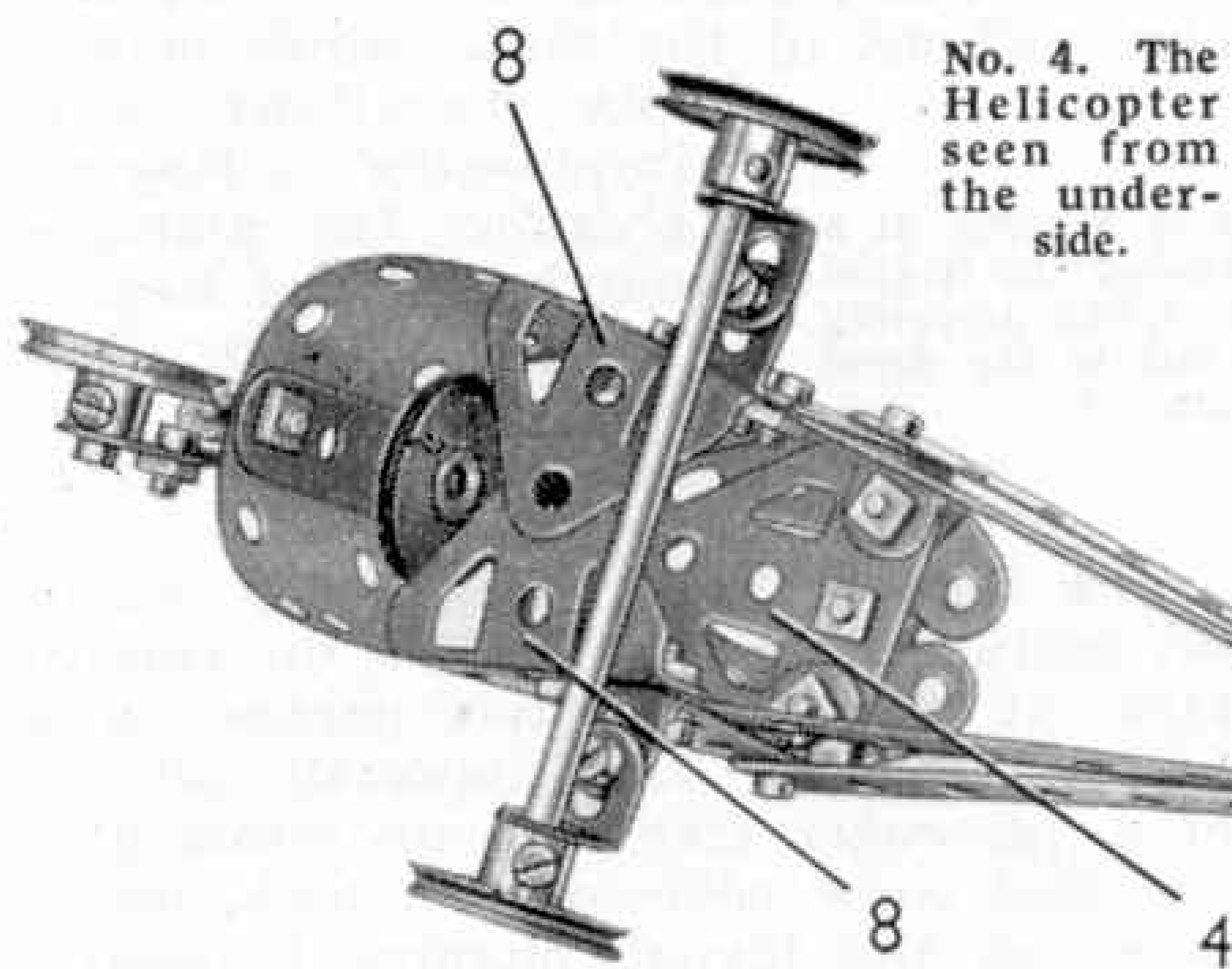
No. 2. An underneath view of the Tricycle Delivery Truck.



$2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 1 to each end of the Plate as shown, and to each of these Double Angle Strips fix two $5\frac{1}{2}"$ Strips to form the tail supporting boom. You should arrange the lower one of each pair of Strips so that it overhangs the end of the Flexible Plate by one clear hole.

Next, connect the four $5\frac{1}{2}"$ Strips at their rear ends by a $\frac{3}{8}"$ Bolt 2, and bolt a Flat Trunnion 3 between the overhanging ends of the top $5\frac{1}{2}"$ Strip on each side.

Now form the top of the cabin by bolting a Flat Trunnion 4 and two $2\frac{1}{2}"$ Stepped Curved Strips to the top lugs of the Double Angle Strips 1. Bolt the Curved Strips together at their front ends, and while doing this you should fix an Angle Bracket in place by the same bolt. Open the Angle Bracket out slightly and attach it to the top end of a $2\frac{1}{2}"$ Strip 5, bolted to the centre of the Flexible Plate. Before you fix the Strip in place take care to place an Angle Bracket 6 on the bolt. For the control wheel take a 1" Pulley and fix it by its set-screw on a $\frac{3}{8}"$ Bolt 7.

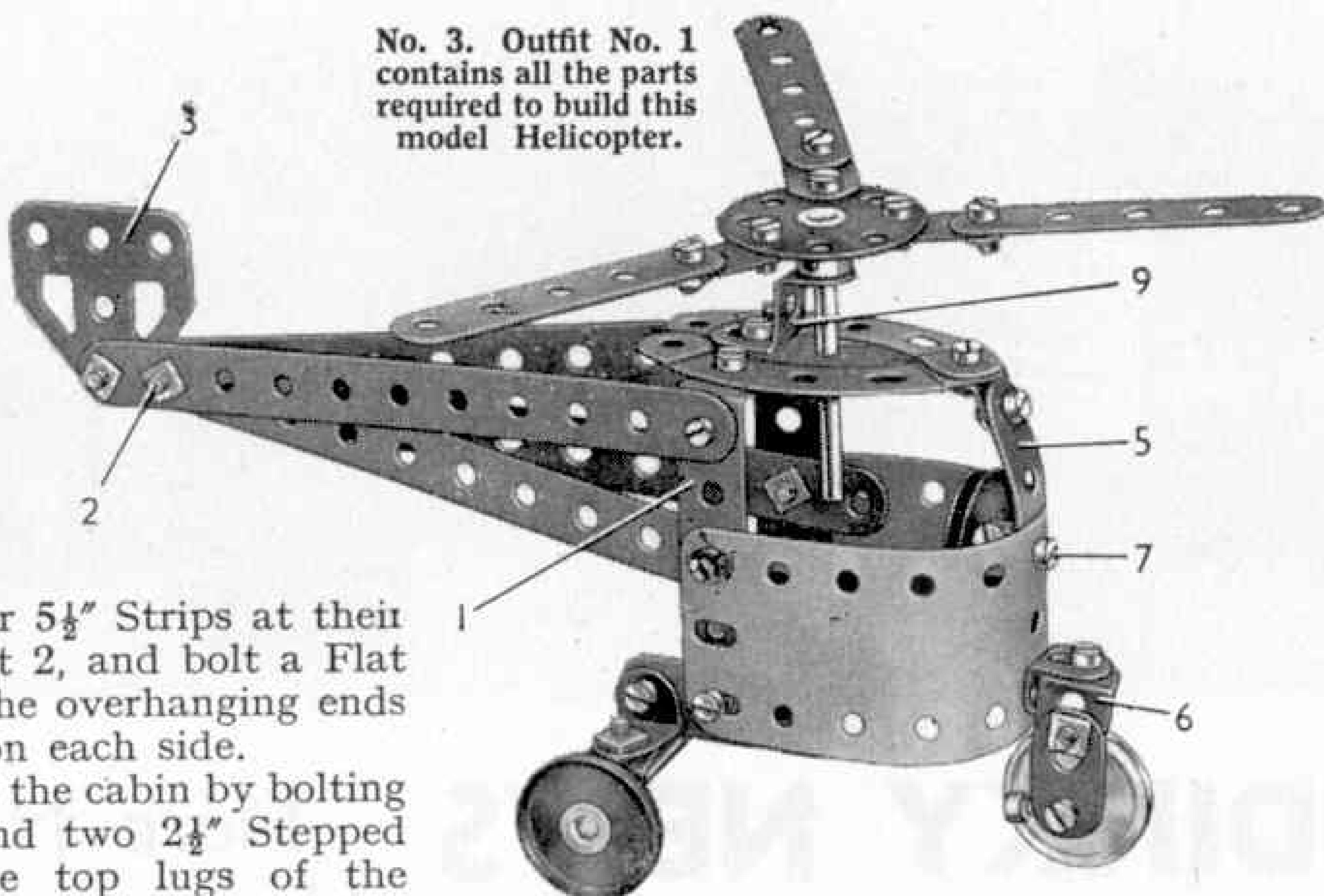


No. 4. The Helicopter seen from the under-side.

Now bolt a Trunnion 8 to each end of the Flexible Plate and to each Trunnion fix two Angle Brackets arranged in the form of a reversed angle bracket. (Meccano Part No. 125). Fix the main landing wheels by their set-screws on a $3\frac{1}{2}"$ Rod pushed through the Angle Brackets. On a $\frac{3}{8}"$ Bolt passed through the round hole of a Fishplate bolted to the Angle Bracket 6, fix the nose wheel.

To complete the model assemble the rotor by bolting three Fishplates to a

No. 3. Outfit No. 1 contains all the parts required to build this model Helicopter.



Bush Wheel, and then extend each Fishplate by a $2\frac{1}{2}"$ Strip. Fix the Bush Wheel on a 2" Rod pushed through the Flat Trunnion 4 and a $\frac{1}{2}"$ Reversed Angle Bracket 9 bolted to the Flat Trunnion. Hold the Rod in position by placing on it a Washer and a Spring Clip underneath the Flat Trunnion.

Parts required to build the Helicopter: 4 of No. 2; 4 of No. 5; 4 of No. 10; 7 of No. 12; 1 of No. 16; 1 of No. 17; 4 of No. 22; 1 of No. 24; 1 of No. 35; 27 of No. 37a; 24 of No. 37b; 2 of No. 38; 2 of No. 48a; 2 of No. 90a; 4 of No. 111c; 1 of No. 125; 2 of No. 126; 2 of No. 126a; 1 of No. 189.

A Useful Hint for the Owners of Small Outfits

In most small models Spring Clips are used to prevent Rods from sliding in their bearings.

Generally this arrangement will be found entirely satisfactory, but occasionally a more positive

means of preventing the Rod from sliding is needed, as in the case of a Rod that supports the swivelling cab of a crane or an excavator. A Pulley or a Bush Wheel can be used of course, but very often these parts are needed in other sections of the model. A useful tip is to use a Cord Anchoring Spring instead of a Spring Clip, as it will effectively hold the Rod in position. You should place a Washer on the Rod between the Cord Anchoring Spring and the underside of the model.



DINKY NEWS

BY THE TOYMAN

More New Items for your Collection

IT is now almost two years since I started these monthly articles for Dinky Toys collectors, and during that time I have made a great many friends among them all over the world. Many of these enthusiasts write to me from time to time to tell me of their activities, and to put forward ideas that occur to them during their games and play schemes. These letters are a source of real pleasure to me, and reading them is one of the most pleasant and interesting aspects of my connection with the Dinky Toys hobby.

In addition to the pleasure they give me these letters provide a good guide to the kind of news and information you like me to include in my monthly notes. It is evident that every collector waits most keenly for announcements of new models, and it appears that in many groups of friends there is great competition to be the first to know of a new model and to add it to his collection! Several readers have written to say how delighted they have been recently to see at least one new model introduced each month, so I am sure the two new items featured in the pictures on these pages will receive an enthusiastic welcome and will be eagerly sought after.

The range of Dinky Toys tank vehicles is now extended by the introduction of an old favourite in a new guise. I refer to the Foden 14-ton Tanker, which is already one of the most popular Dinky

At the top of this page is a scene at a municipal bus garage showing the Regent Tanker (Dinky Supertoys No. 942) preparing to deliver a supply of fuel to the depot storage tank.

Toys, and is available now in a completely new and very attractive colour scheme. This latest Tanker is enamelled in the striking finish of the Regent Oil Co. Ltd., and will make a really handsome addition to your tanker fleet. The cab, chassis and lower part of the tank are finished in blue, while the top of the tank is enamelled red. A white flash divides the red and blue sections of the tank, which carries the familiar and impressive Regent transfers. The catalogue number of the Regent Tanker is No. 942, and it is of course included in the Supertoys range.

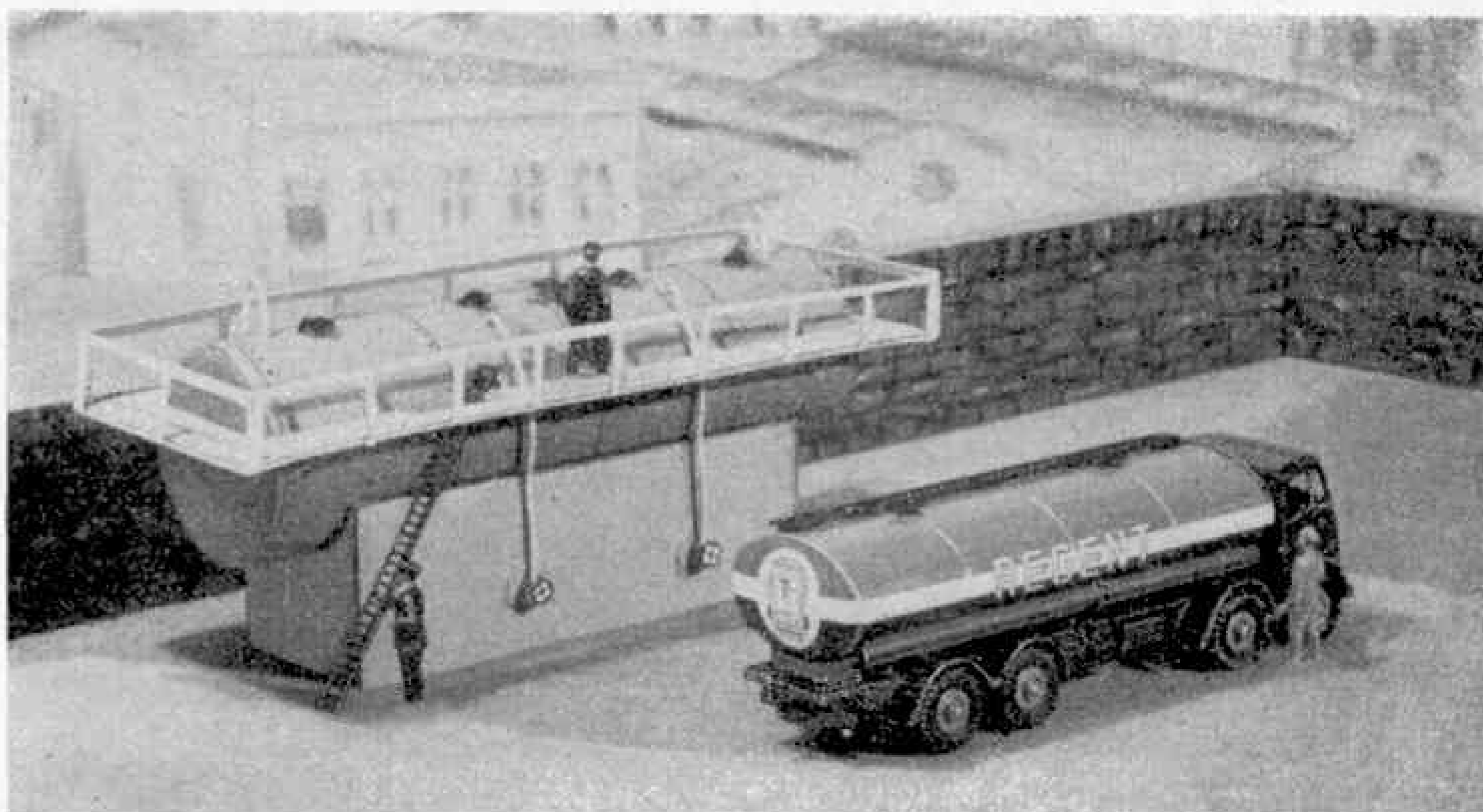
The Regent Tanker is shown in two of my pictures delivering fuel to the storage tank at a municipal bus garage on a toytown layout. This important section of a passenger transport undertaking is one that some collectors overlook, for in many of the layout pictures I receive, although the buses and garages are well in evidence, there do not appear to be facilities for refuelling the bus fleet! A storage tank of the kind shown in my scenes is made very easily from odd scraps of cardboard. The tank itself is rolled round a wooden former and glued to shape, but perhaps you will be fortunate enough to find a suitable cardboard tube of the kind used for mailing large drawings and documents. The tank pipes are represented by pieces of insulated wire passed through holes in the cardboard and

glued in place. An inspection platform and a ladder leading to it complete the tank and provide a striking and realistic accessory.

You will perhaps remember that when referring to the Cunningham C-5R Road Racer in the March issue of the *M.M.*,

sports car series. It is provided with a shaped celluloid windscreen, competition numbers and a miniature driver in white racing kit. The Austin-Healey is available in two attractive colour schemes, each with its own competition number. The model can be obtained enamelled cream,

In this close-up the splendid details of the Regent Tanker show up clearly.



I promised that more sports cars would be made available in due course. Since then the M.G. Midget has been introduced, and now we have the splendid Austin-Healey 100 Sports, Dinky Toys No. 109, which is shown in my third picture. I am sure this outstanding car needs no introduction to boys as keenly interested in motor sport as most Dinky Toys enthusiasts, for in recent years Healey cars have many successes in rallies and sports car events to their credit.

The model is a really close reproduction of the actual car, and includes all the features associated with the Dinky Toys

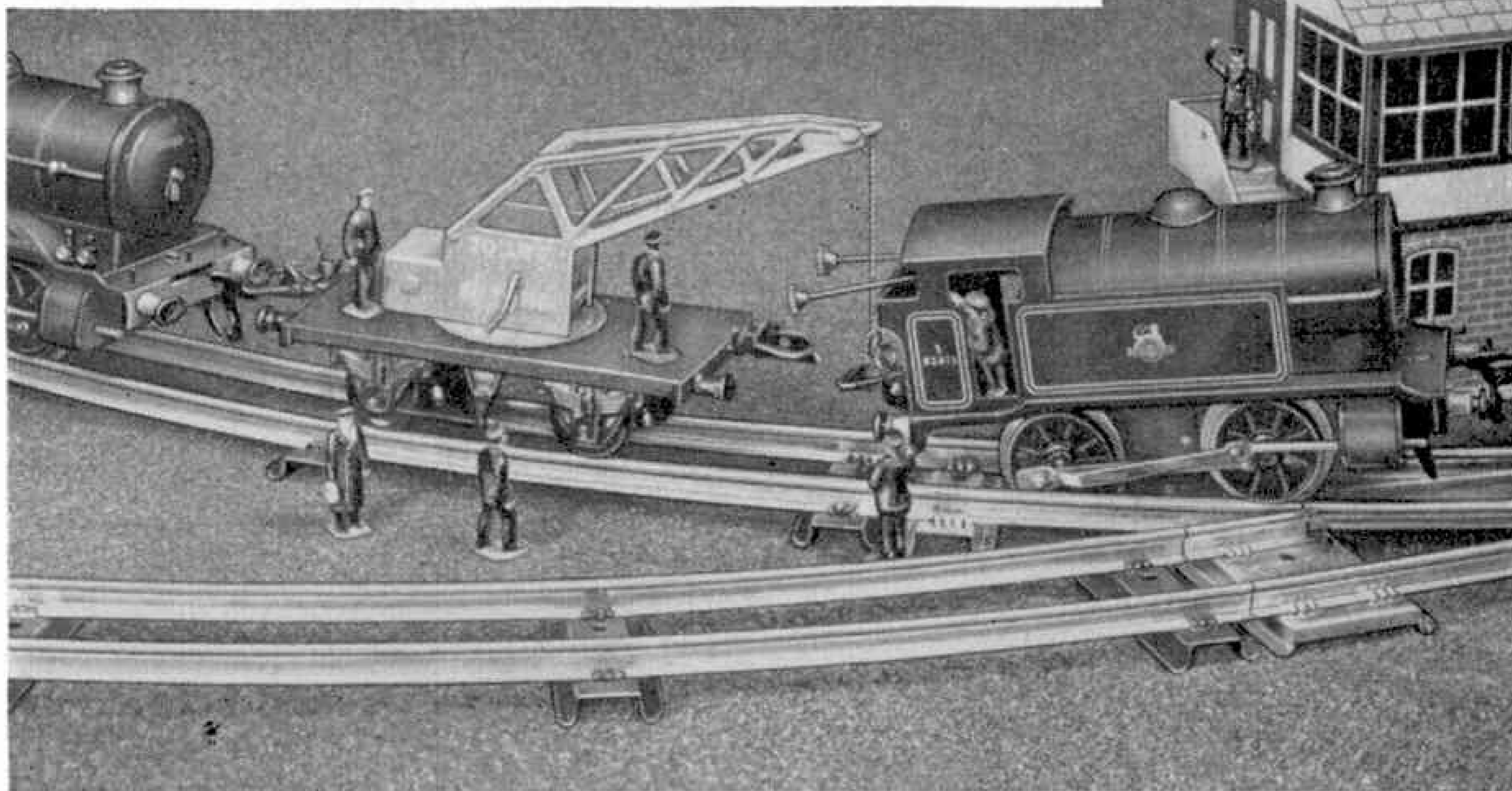
with red seats, dashboard and wheels, or in yellow, with blue seats, wheels and dashboard.

The lower picture on this page shows the Austin-Healey in a typical setting in a road race. The track at this section of the course is flanked by grass banks topped by hedges, and I think you will agree the scene is most effective. For the hedges I used strips of steel wool ruffled out, dipped in suitable paint, and pinned to pieces of cardboard. For the "grass" bank our old friend dyed sawdust has come in useful. This is piled below the hedges to cover the cardboard base of the layout.



The new Dinky Toys Austin-Healey rounding a bend during a road race. Note the detailed modelling of the radiator grille and the graceful streamlining of the body.

A heavy lift for the Hornby Crane Truck! The Truck should of course be steadied by the operator while lifting is in progress.



HAVE you ever given much thought to the curves on your Hornby Railways? They are necessities and they give a really fine appearance to a layout besides making the running of a train more exciting. So far I have only talked about 1 ft. radius curves, but the easier 2 ft. radius curves are included in the Nos. 40/41 and 50/51 Sets and their use in a layout does give the engines and rolling stock a better chance of putting up a better performance than on the rather more acute 1 ft. radius curves of the smaller Sets. In fact the engines and coaches of the 2 ft. radius sets will not run on the smaller curves at all, but all of our productions run splendidly on the larger curves.

Twelve 2 ft. radius curves form a circle, so that it is quite easy to lay down the quarter-circles of three Curved Rails each that are frequently required in building up a fairly large oval track having straight sections in between the various "corners."

The standard PR2/PL2 Points are made to the same measurements as these and other track units, so it is quite easy to substitute Points either for a standard Straight Rail, or for a Curved Rail. You

just take out the Rail, whether straight or curved, and put in the Points.

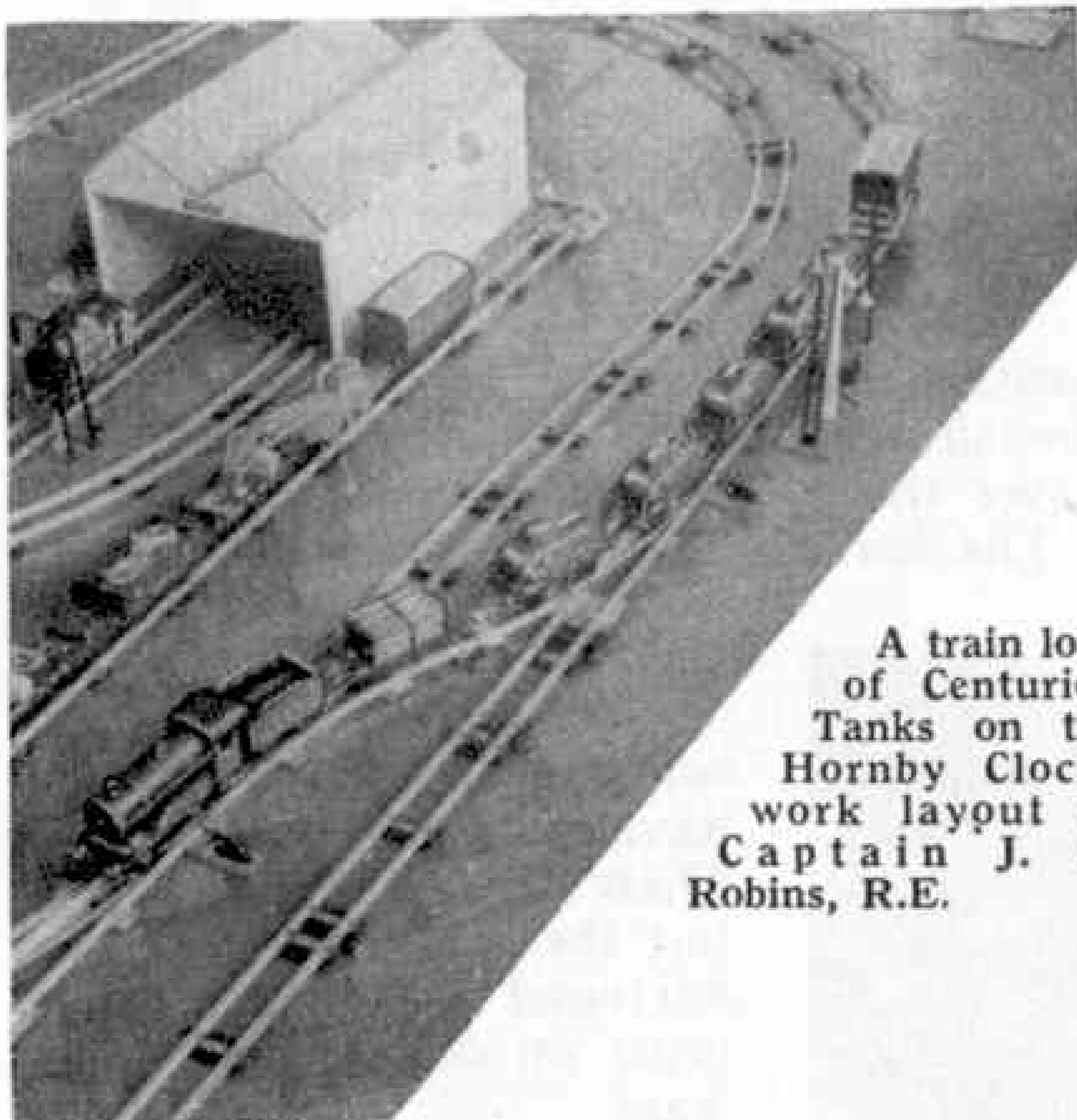
Most of you like to have a double track system. It is not possible to lay down a perfectly symmetrical double track, but by using the half rails and quarter rails of the Hornby track system the straight lengths of track can be so made up that the curves match one another reasonably well. Crossover points between up and down tracks are readily arranged by using two Points of the same hand together, and then trains can be run from one track to the other.

Forties and Fifties

By "Tommy Dodd"

An example of this sort of thing is shown on the upper picture on the opposite page. This arrangement does set the tracks a little wide apart, but the general effect is good, and with 2 ft. radius curves our 4-wheeled Hornby trains have an easy passage from one track to the other. The train shown in the picture is of special interest because it is carrying a number of Dinky Toys Centurion Tanks. These are conveyed on Flat Trucks, one of the most useful types of vehicles in the Hornby system.

Probably some of you will remember the reference to such special traffic on



A train load of Centurion Tanks on the Hornby Clock-work layout of Captain J. A. Robins, R.E.

the layout of Captain J. A. Robins, in the description of the railway that appeared in the April *M.M.* Nowadays military vehicles and equipment are frequently to be seen loaded on railway wagons, and Dinky Toys Army vehicles present some splendid opportunities in this way. Loading and unloading them may call for special handling and I am sure that many of you will enjoy the fun of arranging special loading "banks" or perhaps just simple ramps, in order to get the Lorries and Tanks on and off your railway wagons.

The stock in the Nos. 40/41 and 50/51 Train Sets, and the additional vehicles of the Hornby No. 1 type that are intended to run with them, are all fitted with Hornby automatic couplings. These work perfectly well as long as their action is understood and the couplings are kept in good order.

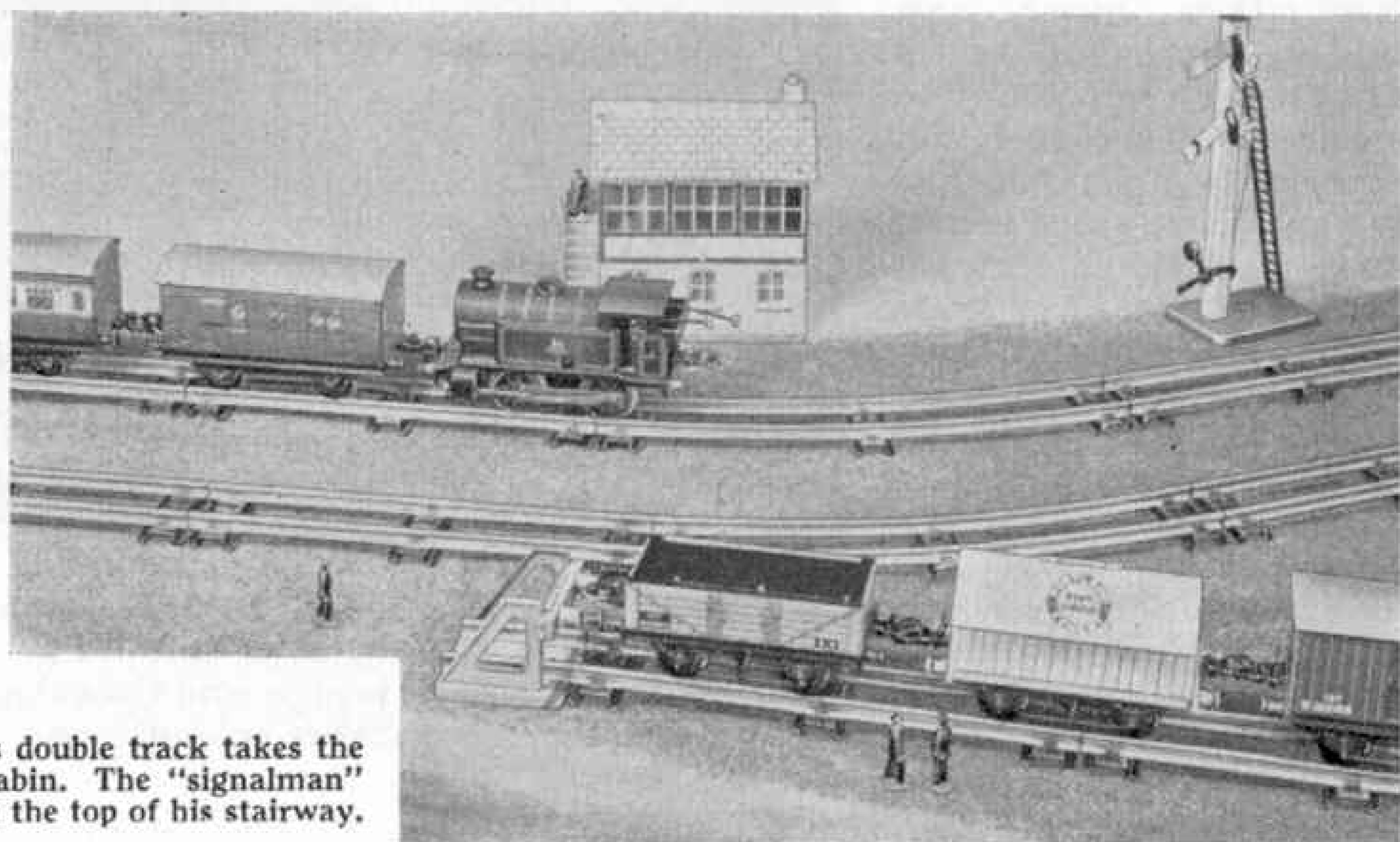
You cannot expect them to work properly if one or two of them have been badly bent, as the result of a collision or another mishap. Accidents can occur, I know, even on the best Hornby railways,

although of course we should do all we can to avoid them.

The hook part of the couplings should be set so that each is at about the same height as its neighbour, and you must see that the coupling loops can work freely. If these loops are bent they cannot always move easily up or down in the way they are intended. Make sure then that the loops keep their original shape and that they are free enough to move, and then you will find that your vehicles will couple correctly when they are pushed together by the engine. But don't do this violently. Smart, but not rough coupling should be the aim.

Uncoupling is not automatic, of course, but has to be done by hand. But this is fun. As both coupling loops are engaged with the respective opposite hooks, the loops must be lifted just as the engine starts to draw the vehicles apart. Use a Meccano Rod or something similar to knock the loops upward clear of the hooks. You will soon get used to this operation, which is not difficult to carry out anyway.

One or two of my young friends who are owners of No. 41 and No. 51 Train Sets have asked me whether it is in order for them to use the rolling stock of the respective Sets together. Briefly, the answer is—Yes. The Coaches and Passenger Brake Vans concerned are similar in construction, so that they will couple up and run together without difficulty. Of course the No. 41 vehicles are non-corridor stock and the No. 51 type represent the corridor type, but the odd vehicle or two of one kind can quite reasonably be included in a train consisting mainly of the other type.



A gentle curve on this double track takes the line past the Signal Cabin. The "signalman" watches the train from the top of his stairway.

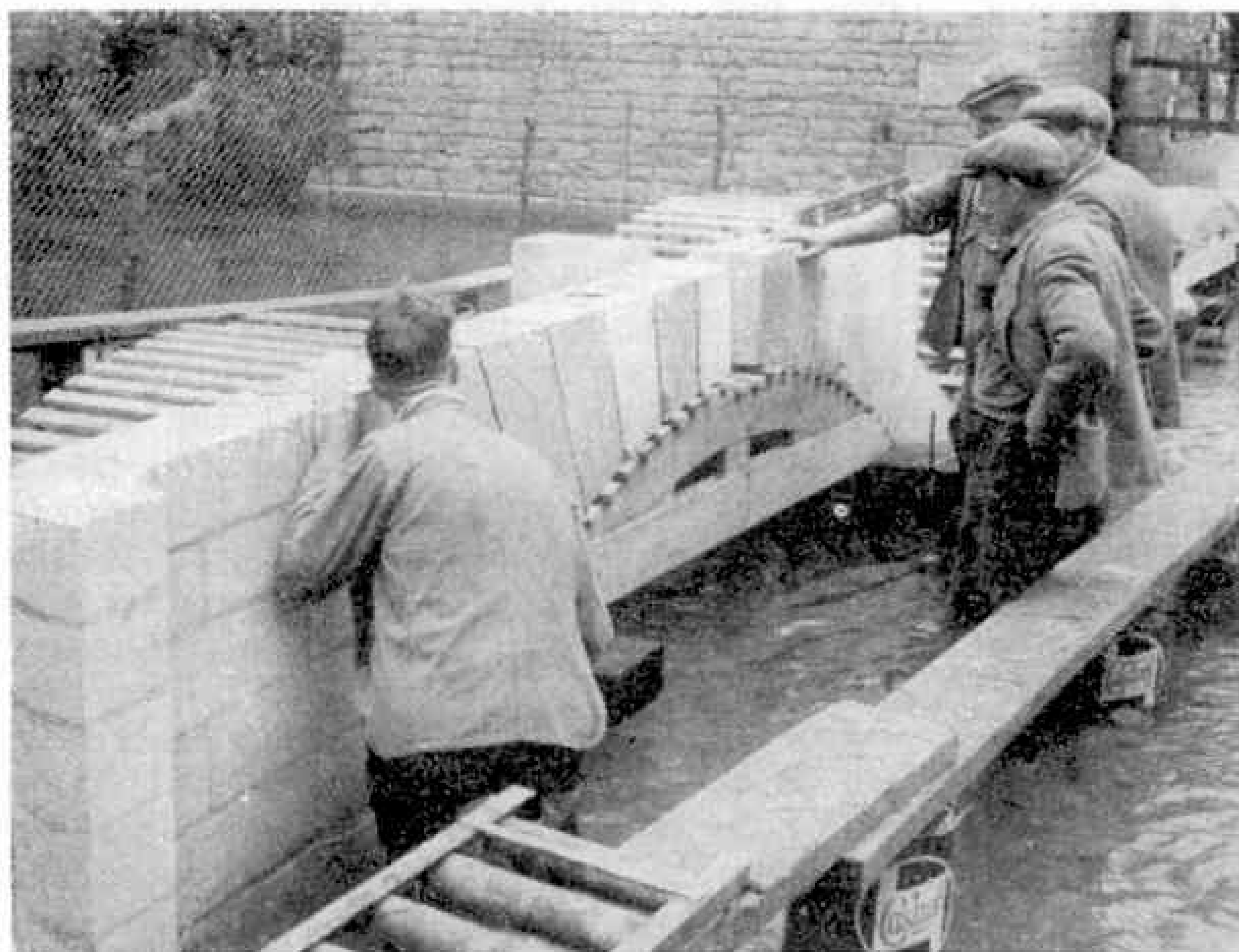
Building a Stone Arch Bridge

I FIND the two pictures on this page really delightful. They give what one may call a close-up view of craftsmen building a bridge of a kind that has been

position, an operation that clearly arouses the interest of all the bridge builders. Later the centering would be removed.

The earliest arches known were erected by the ancient Egyptians. The Romans built a great number of masonry arch bridges, many of which have survived to this day. Their arches were round, but the practice of building flattened or elliptical arches grew up during the Middle Ages.

Arch bridges can be built in brick, as well as stone. The flattest brick arch ever built is that of the bridge carrying the line of the B.R. Western Region across the Thames at Maidenhead. It was built by Brunel, and its speedy collapse was foretold; but it is still there, carrying heavier loads than when it was erected.



The building of a masonry arch bridge at Bourton-on-the-Water, Gloucestershire, is shown in these pictures. In the lower one the keystone of the arch is about to be placed in position. Photographs by W. S. Garth.

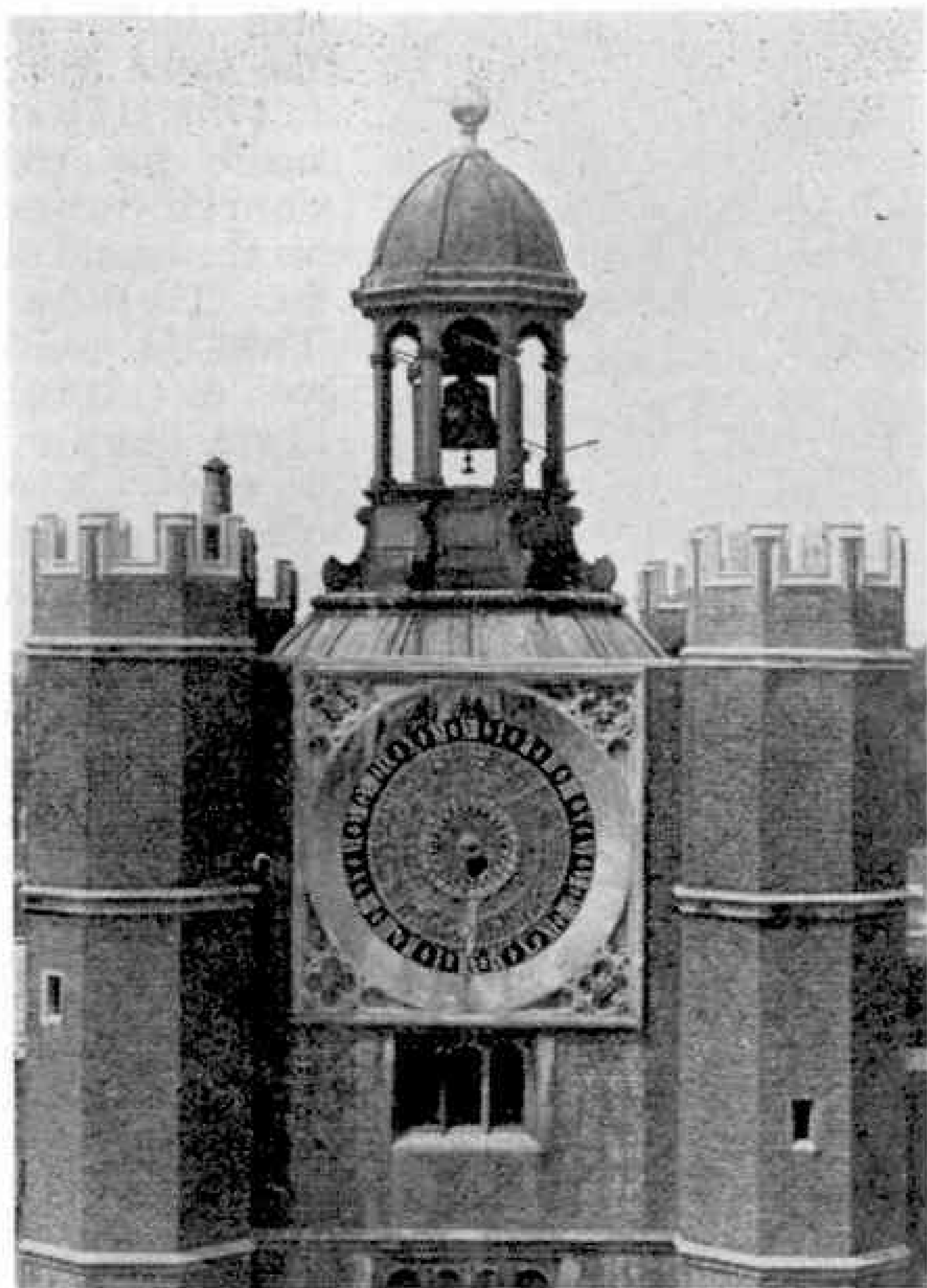
used for centuries. Nowadays most new bridges seem to be of steel or reinforced concrete. This does not necessarily mean that they are ugly, but there are no more handsome bridges than arches built of stone in the traditional way.

The scene of the work is the lovely village of Bourton-on-the-Water, in the Cotswolds. My pictures show clearly the wood centering put up to support the arch until it is completed, as well as the wedged shaped stones, called voussoirs, of the arch itself. The central stone is called the keystone, and in the lower illustration this is about to be placed in



London Bridge, which has five elliptical arches, is a fine example of a masonry arch bridge, and Grosvenor Bridge, Chelsea, is another splendid one.

THE EDITOR.



The famous astronomical clock at Hampton Court Palace was made for Henry VIII in 1540. Crown copyright photograph.

SOME of the most famous of the ancient clocks of Great Britain are found in its churches, but there are a number of others, either in public buildings or in private possession, that are equally notable. Among these one of the most celebrated is that in the Clock Court at Hampton Court Palace. The Palace itself was built by Cardinal Wolsey, but afterwards was seized by Henry VIII. Over the gateway, facing east, is a splendid astronomical clock, made for the King in 1540 by Nicholas Oursian, a French clockmaker. The inventor was a celebrated German astronomer, Nicholas Cratzer, who came over to England on the invitation of Wolsey. This was the first astronomical clock in England, and Cratzer was also responsible for the second, at Christ Church, Oxford.

During the last century the Hampton Court clock was taken down, presumably because it was out of order, and was left to moulder in a shed. There it was found by Mr. Ernest Law, the historian of the Palace, and he had it repainted and restored to its original position. The dial is

very complicated, and besides displaying the twelve signs of the Zodiac, may be said roughly to indicate the hour of the day or night, the month, the day of the month, the position of the Sun in the ecliptic, and the number of days since the beginning of the year. The various phases of the Moon, its age in days, and the hour of the day or night at which it "souths" or crosses the meridian also were recorded.

This clock was designed before the discoveries of Copernicus and Galileo were generally known, and it is therefore curious to notice that the Earth is represented by a small projecting globe in the centre, while the "Sun" appears on a long pointer, which takes a year to travel round the dial, and therefore to revolve round the "Earth."

The outer rim of the dial is 7 ft. 10 in. in diameter, and the moulded stone framework is about 15 ft. square, with quatrefoils at the corners in which are carved the badges of Henry VIII—the portcullis and fleur-de-lys above, and the Tudor rose with his initials, H.R., below. The elaborate machinery of the clock, however, is comparatively modern, and it keeps fairly good time. It takes nearly half an hour to wind it every week.

Not so old, but with equally interesting royal associations, is the clock in Rushen Castle, Castletown, in the Isle of Man. Its works nearly fill the oratory of the castle, and according to tradition it was presented to the Earl of Derby by

Queen Elizabeth, Henry VIII's daughter, in 1597. The old clock still keeps good time, and the bell upon which the hours are struck was, by its inscription, the gift of James, the tenth Earl of Derby, in 1729.

Almost as old as this is a quaint clock erected in an unusual place—on the end of a barn at Baldock, in the county of Hertfordshire. It is also unusual in that it is in a diamond-shaped frame. As far as can be traced it was put up about the year 1625. Dating back to the same century is a brass wall or bracket lantern clock, which is exhibited in working order in the Victoria and Albert Museum, London. The maker of the clock, Ahasuerus Fromanteel, was a member of the London Guild of

Ancient Marvels in Mechanism

By D. England

The ancient clock at Rushen Castle, in the Isle of Man, also has royal associations. Photograph by courtesy of Photonica Ltd.

Clockmakers about 1660. This model chimes the quarters, strikes the hours, and has an alarm. The escape is horizontal, and a short bob-pendulum swings in front of the dial.

The march of mechanisation does not always show itself openly—at least, as far as clocks are concerned. In London, for instance, there is a clock that has been a familiar landmark to successive generations of merchants who have had business to transact at the Cutler Street Warehouses of the Port of London Authority. It stands just as it did when John Thwaites of Clerkenwell placed it in position in 1801, and few would realise that a few years back the clock was equipped with an electric motor in place of the old weights and pulleys.

The clock, as John Thwaites installed it, had an innings of getting on for a century and a half, and with its new mechanism may live as long again to give the time of day to merchants who come to bargain in carpets, drugs, curios, silks, cigars and all the other things that are stored in the Cutler Street Warehouses.

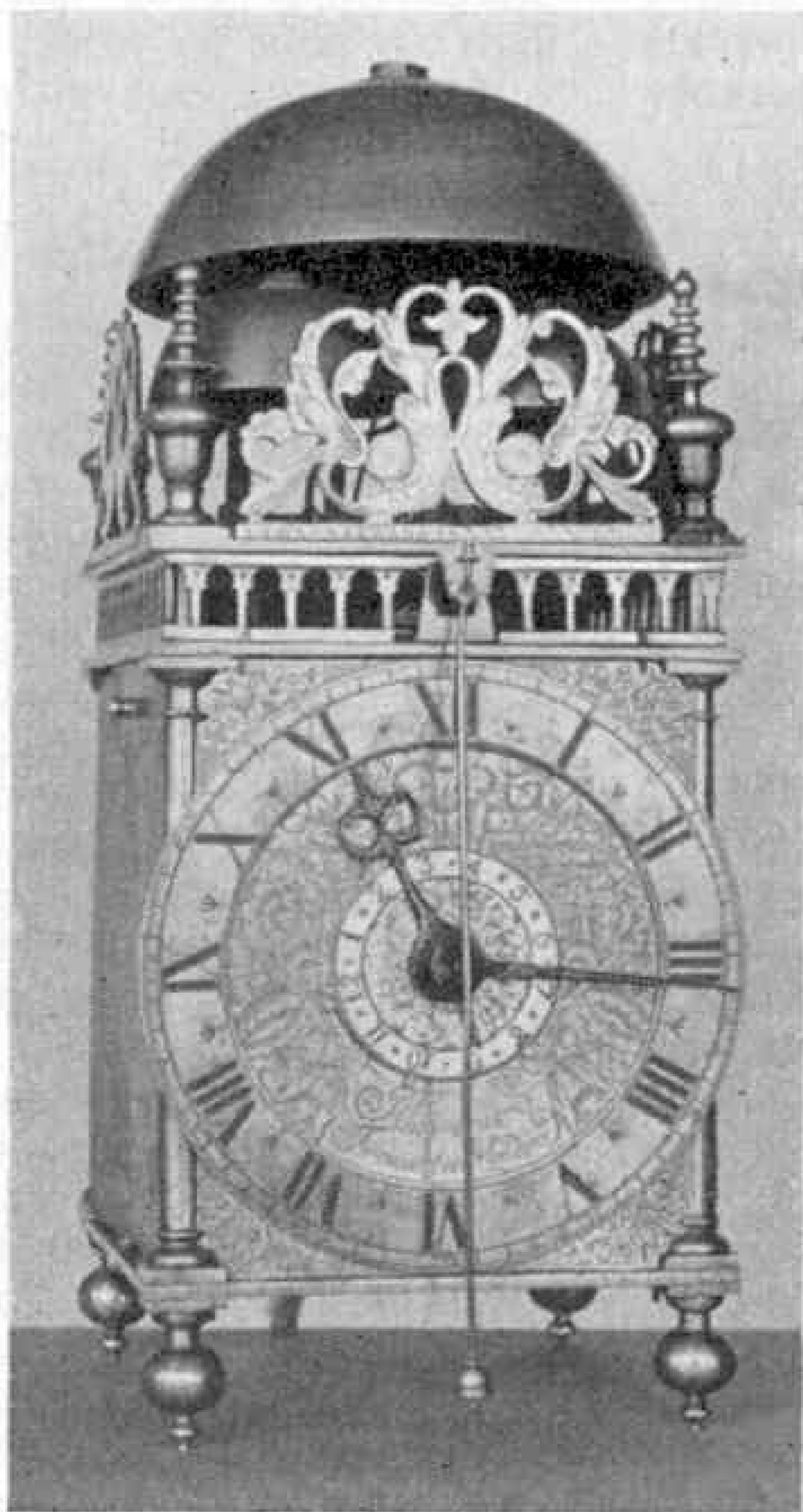
The work of John Thwaites remains commemorated in the face of the clock and its hands. After more than 200 years the firm who made it still flourishes in Clerkenwell under the name of Thwaites and Reed. There is an older clock



still built by the same firm, in 1786. It was made for the church tower on the island of St. Helena. This is still an excellent time-keeper, and no electrification has come along to aid it. The clock gave the time to the Duke of Wellington when he landed in St. Helena in Trafalgar year, and in 1821 it ticked out the last moments of Napoleon's career.

Apart from clocks on public buildings there are several other notable domestic specimens. Among the outstanding ones is a giant clock, 8½ feet tall, by Samuel Watson of Coventry, who in 1682 received as much as £215—worth at least £1,000 now—from Charles II for a timepiece. As for the large clock, a gracefully carved body supports it, surmounted by finely carved figures on each side of the central cartouche ornament.

Occasionally old clocks come to light in a curious manner. Twenty years back a cottage was demolished at Seaford, on the coast of Sussex. There was discovered in a recess in the kitchen wall a fine grandfather clock, in a case of inlaid polished mahogany, that was entirely covered by wallpaper. The name on the brass face was Chas. Gretton, London. Charles Gretton was a famous clockmaker, of The Ship in Fleet Street. He was apprenticed



This fine 17th century clock by Ahasuerus Fromanteel is in the Victoria and Albert Museum. Crown copyright photograph.

to Lionel Wyth in 1662, was elected a member of the Clockmakers' Company in 1672, and became Master in 1701. To Charles Gretton was apprenticed in 1679 the famous Henry Sully.

In the Wetherfield Collection were a number of Gretton clocks, and advertisements asking for the return of watches stolen by highwaymen "to Charles Gretton at The Ship, over against Sergeants' Inn Gate." A notable London auctioneer, Mr. W. E. Hurcomb, had the disposal of this collection. He doubted if they cost the collector £5,000, although he may have valued them at £50,000. During his lifetime he offered them at £18,000, at which sum the executors agreed to sell them through Mr. Hurcomb either by private treaty or auction. On May Day, 1928, the auctioneer sold them for £30,000!

The gem of the collection was the record-priced Tompion, for which he was offered £4,000 to sell it separately. This clock was once the property of the late Duke of Cambridge, and at the Duke's sale in 1904 it sold for 125 guineas. This nobleman was the well-loved but hard-swearing commander-in-chief of the British Army towards the end of last century. In 1911 it came under the

The one-hand clock on Northill Church, Bedfordshire, was the work of Thomas Tompion, the most famous of English clock and watch makers, who is buried in Westminster Abbey.

hammer again and sold for 380 guineas. After the 1928 sale it crossed the Atlantic.

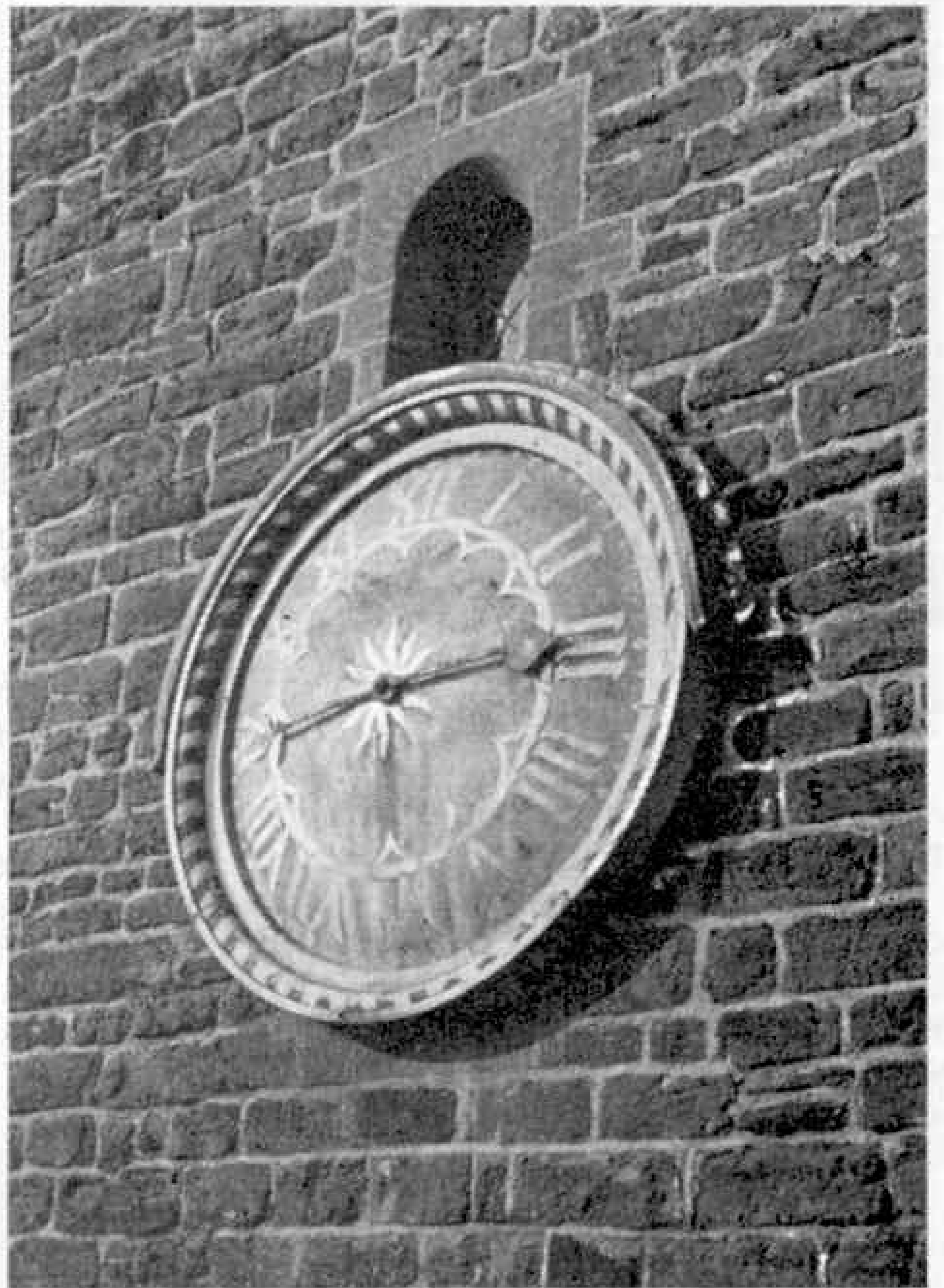
Thomas Tompion, 1639-1713, was the most famous of English clock and watch makers. He is buried in Westminster Abbey. He made a repeating watch—the first, it is said, to be made in Britain—for Charles II and the impoverished monarch kept him waiting for the cash. He made chronometers for the Royal Observatory at Greenwich, and the one-handed clock still extant on the church of his native parish, Northill, Bedfordshire. In King William's Chamber, Hampton Court, there is a wheel-barometer made by him, and in the Privy Garden stands one of his sun-dials.

In his youth Tompion was a farrier and armourer, following the family business, but later he went to London to learn a more delicate art, and his shop stood at the corner of Whitefriars Street and Fleet Street. He became Master of the

Worshipful Company of Clockmakers in 1704. In many places in Britain Tompion clocks and watches are still working perfectly. A clock that he presented to the Pump Room at Bath in 1709 is still in order. Lord Mostyn possesses one of his clocks which requires winding only once a year.

When Sir Christopher Wren was building St. Paul's there was an announcement in the Press that Tompion proposed to make a clock which would go for a century without re-winding. The cost was quoted as between £3,000 and £4,000.

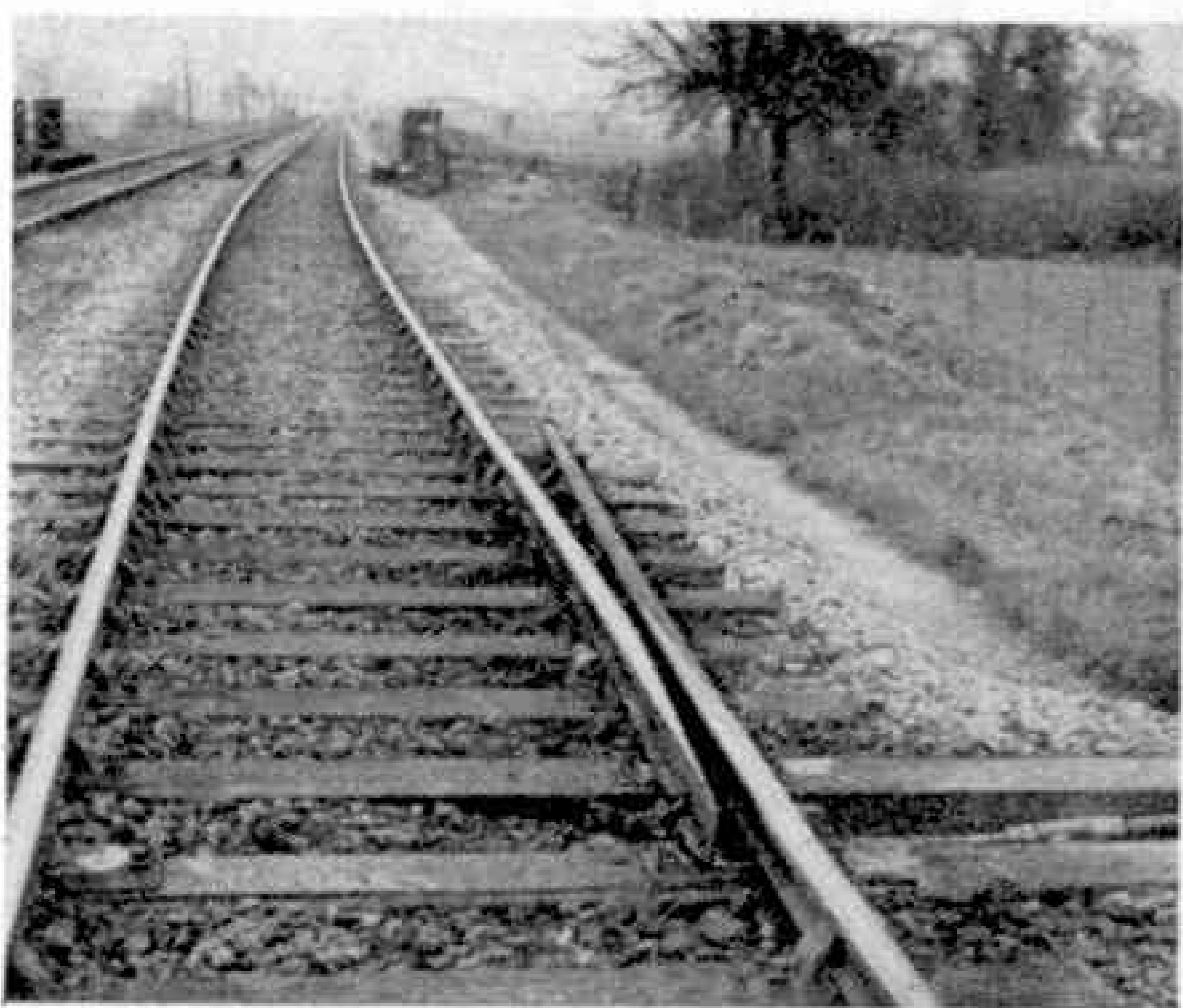
A curiosity of former times was the so-called "water clock." Several of these survive, among them one made by Walter Prescott of Salisbury, in 1670.



A second, in private possession in the county of Norfolk, is dated nine years later. Water clocks are reputed by some to have originated in crude form in Egypt, and seem to have been fairly well known in Rome. It is interesting to learn that the British Astronomer Royal devised a modern type of water clock in 1860 or so for communicating the necessary motion to telescopes equatorially mounted. Water clocks are still used in the East.

Track Curiosities

THE right hand rail in the picture below is not broken or out of order. The formation resembles one side of a set of points, the outermost rail running up to a movable switch blade. The switch rail is moved outward against spring pressure by the wheels of the train, providing a continuous run for the wheel treads, and is

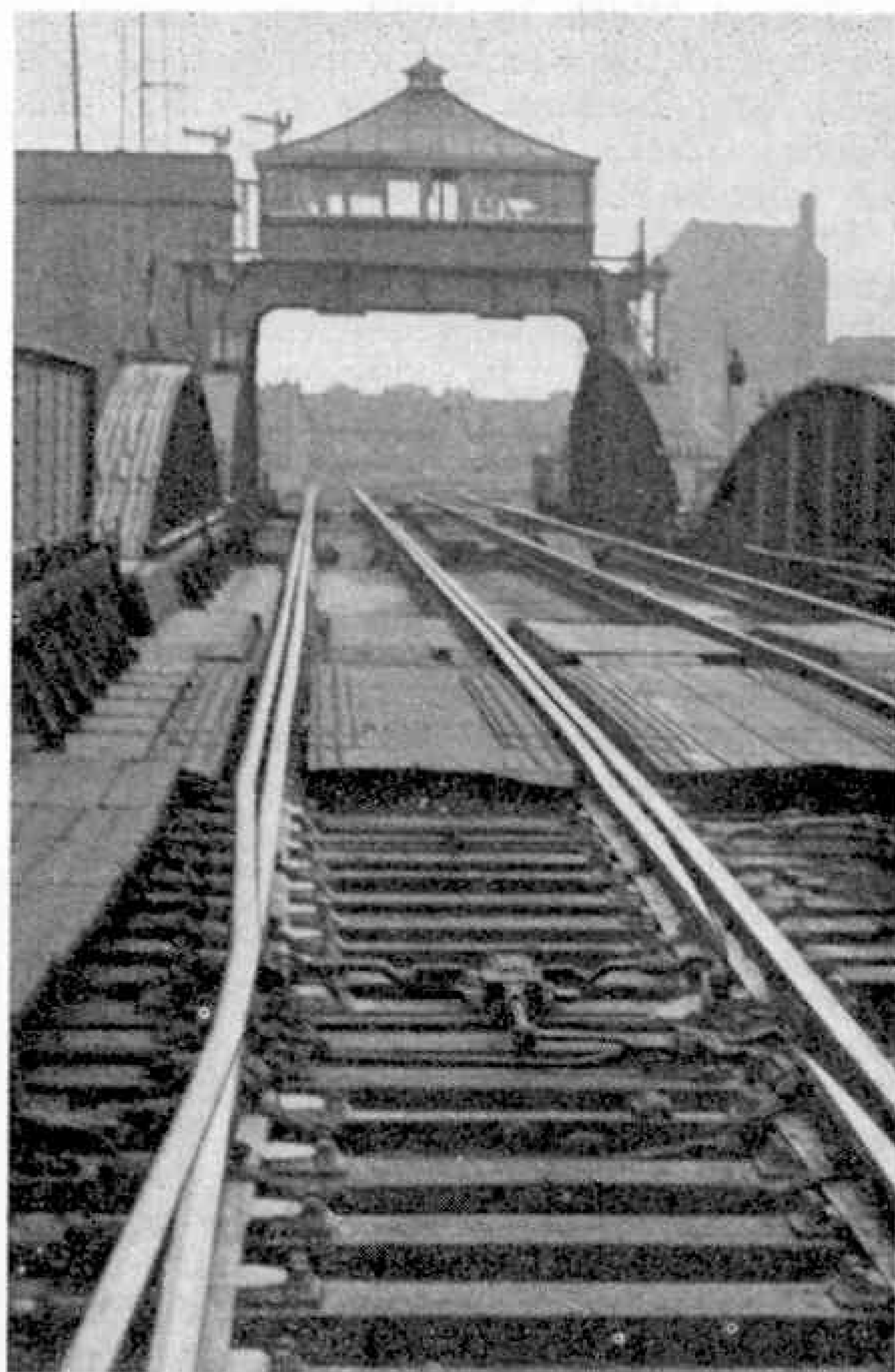


Catch points near Winsor Hill Tunnels, Somerset and Dorset Joint Line. This and the lower photograph are by R. Russell.

opened again by the spring when the train has passed.

Catch points, as these are known, would derail loose vehicles, perhaps from a goods train, that have broken away from their train and are running in the wrong direction. Runaway passenger vehicles would stop under the action of the automatic brake.

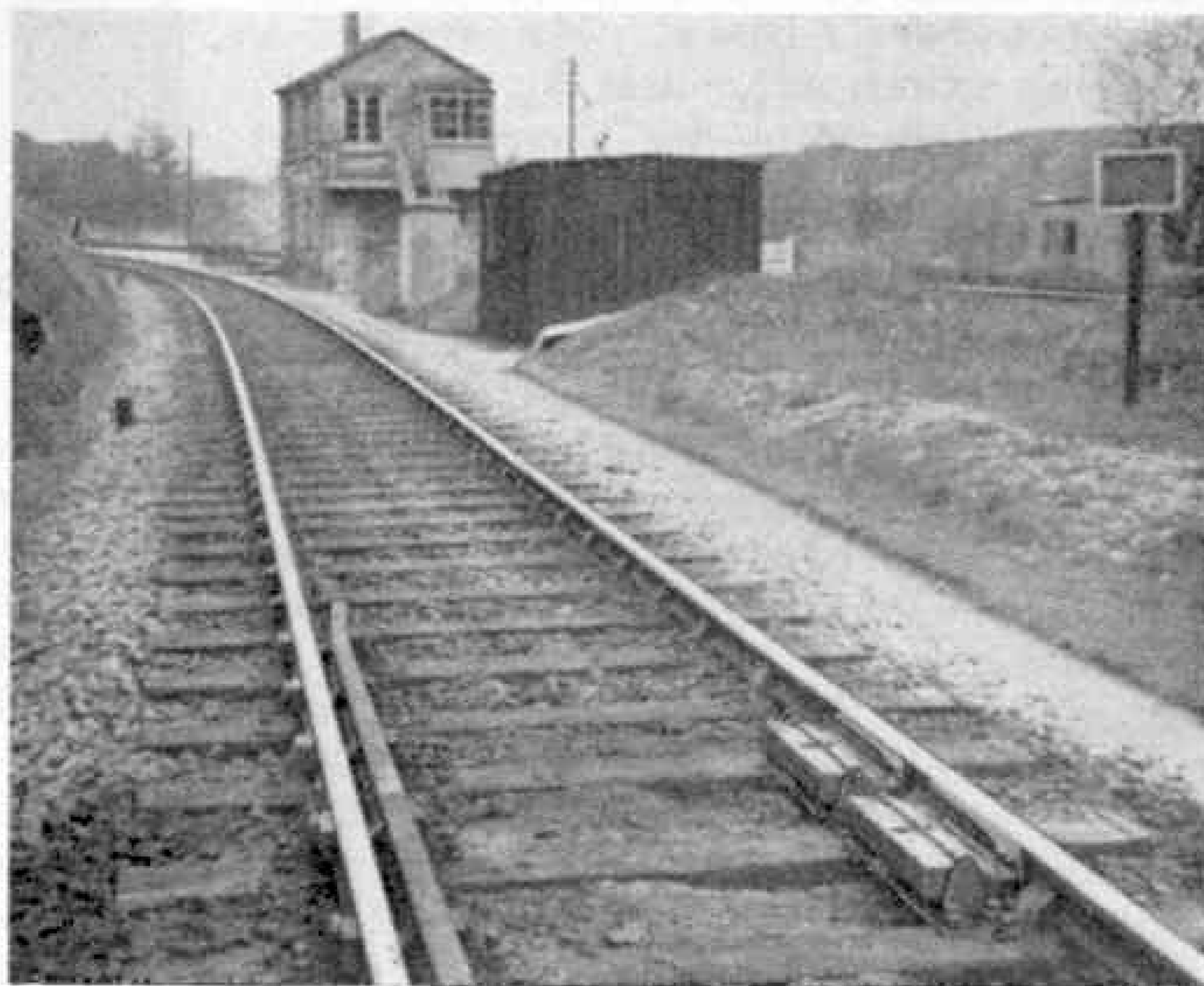
The upper right hand illustration shows the points at Selby Swing Bridge, perhaps the longest on British Railways. There are four roads at each end of the bridge. These converge just short of the actual crossing. As point rodding could not be laid across the swing bridge, which has to be of the opening kind to allow river traffic to pass, it has been necessary to place



Points blades at the end of Selby Swing Bridge, the remainder of the points being on the other side of the span. Photograph by W. S. Garth.

the point blades of one road at one end of the bridge, and the remaining parts of the points at the other end.

A similar arrangement once existed on the other road, but a set of loose trailing points was installed at the far end of the bridge from the cabin.



The check rail and flange lubricator here suggest the sharpness of the curve near Winsor Hill signal box, now disused.

Among the Model-Builders

By "Spanner"

A Multiple Drive Mechanism

Fig. 1 shows a drive mechanism that can be applied in machines such as multiple drilling machines, where a number of shafts are required to rotate at a uniform speed and in the same direction.

Two Face Plates 1 and 2 are joined by two $3\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips. Through the Face Plates a Rod 3 is passed and it carries a 57-tooth Gear 4 and a $1\frac{1}{2}"$ Contrate 5. A Collar outside the Face Plate 2 holds the Rod in place, and the Contrate is driven by a $\frac{3}{4}"$ Pinion 6 mounted as shown. Four Rods are passed through holes in the Face Plates and each carries a $\frac{1}{2}"$ Pinion against the Face Plate and engaging the 57-tooth Gear. A Collar is placed on each Rod against the upper Face Plate, and on its lower end a Coupling is fixed to carry one of the four shafts to be driven.

A Compact Differential Mechanism

The compact differential gear shown in Fig. 2 makes good use of the new 15-tooth Pinion, as the small diameter of the part allows the mechanism to be fitted in a compact housing.

Each half of the axle casing consists of two $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips bolted between a Wheel Disc and a Bush Wheel. A 2" Strip 1 is bolted across each Wheel Disc, and they are connected by $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips. The left-hand Disc

is spaced from these Double Angle Strips by two Washers on each bolt. Another $1\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip 2 fitted with a Double Bent Strip is fixed between Strips 1, but is spaced from one of them by a Collar on a $\frac{3}{8}"$ Bolt. The left-hand axle is passed through the casing and carries a $1\frac{1}{2}"$ Contrate 3 and a $\frac{3}{4}"$ Contrate 4. Two 1" Screwed Rods are held in the Contrate 3 by nuts, and a Collar 5 is fixed on one of them. A Threaded Pin is screwed tightly into this Collar. The Contrate 3 is free on the axle, but Contrate 4 is fixed in place and meshes with a $\frac{7}{16}"$ diam. Pinion 6. This Pinion is loosely mounted on the Threaded Pin and is retained on it by the second Screwed Rod. A $\frac{3}{4}"$ Contrate 7 is fixed on the right-hand axle, and a $\frac{1}{2}"$ Pinion on the driving shaft is meshed with Contrate 3.

The driving shaft is mounted in the Double Angle Strip 2 and in the Double Bent Strip, and should be connected to the gear-box output shaft.

The 15-tooth Pinion, Part No. 26c, and the corresponding 60-tooth Gear, Part No. 27d, were introduced mainly to provide a compact 4:1 ratio, but they have many other uses, as in the example described above.

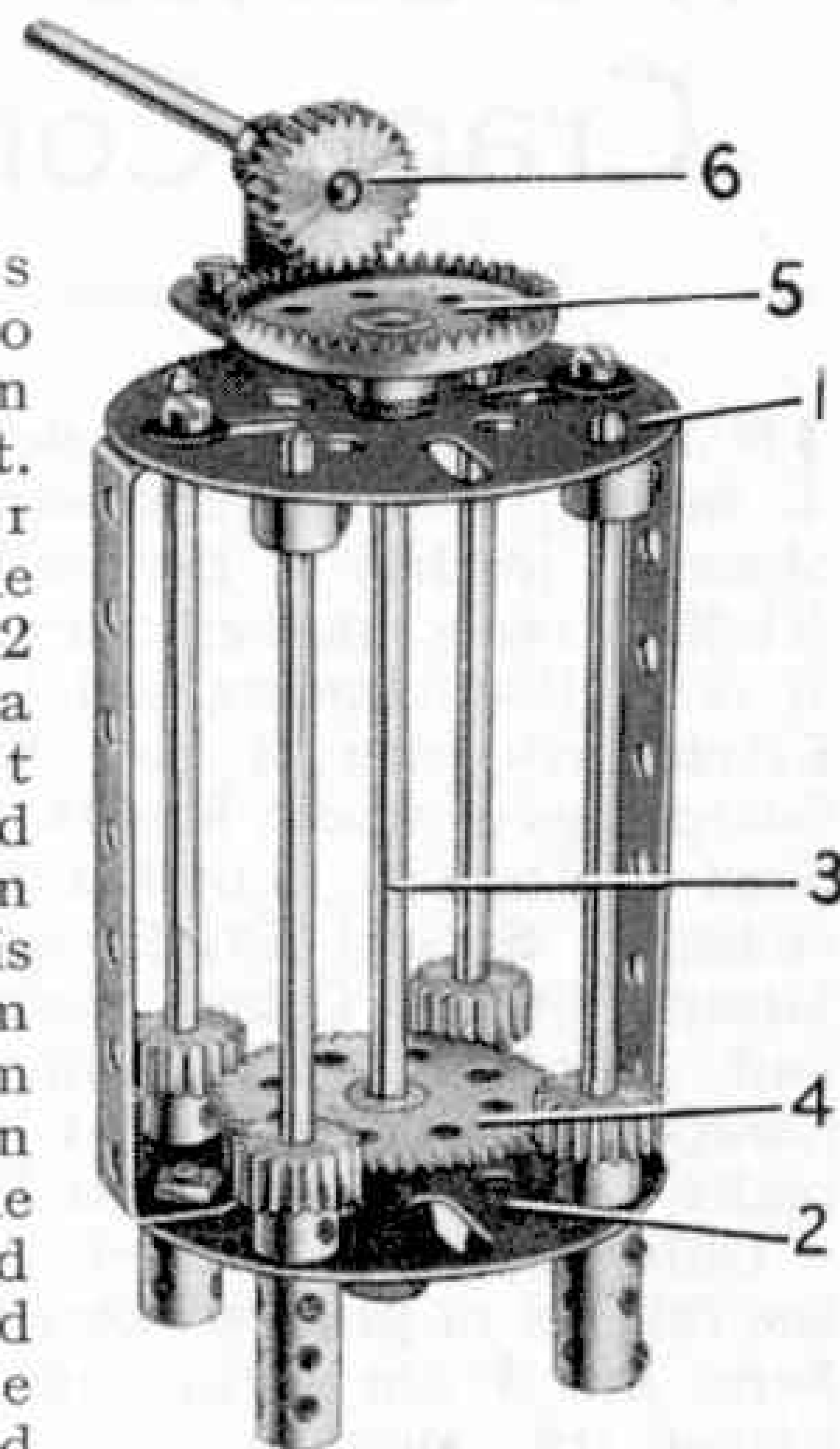


Fig. 1. A drive mechanism for a multiple spindle drilling machine.

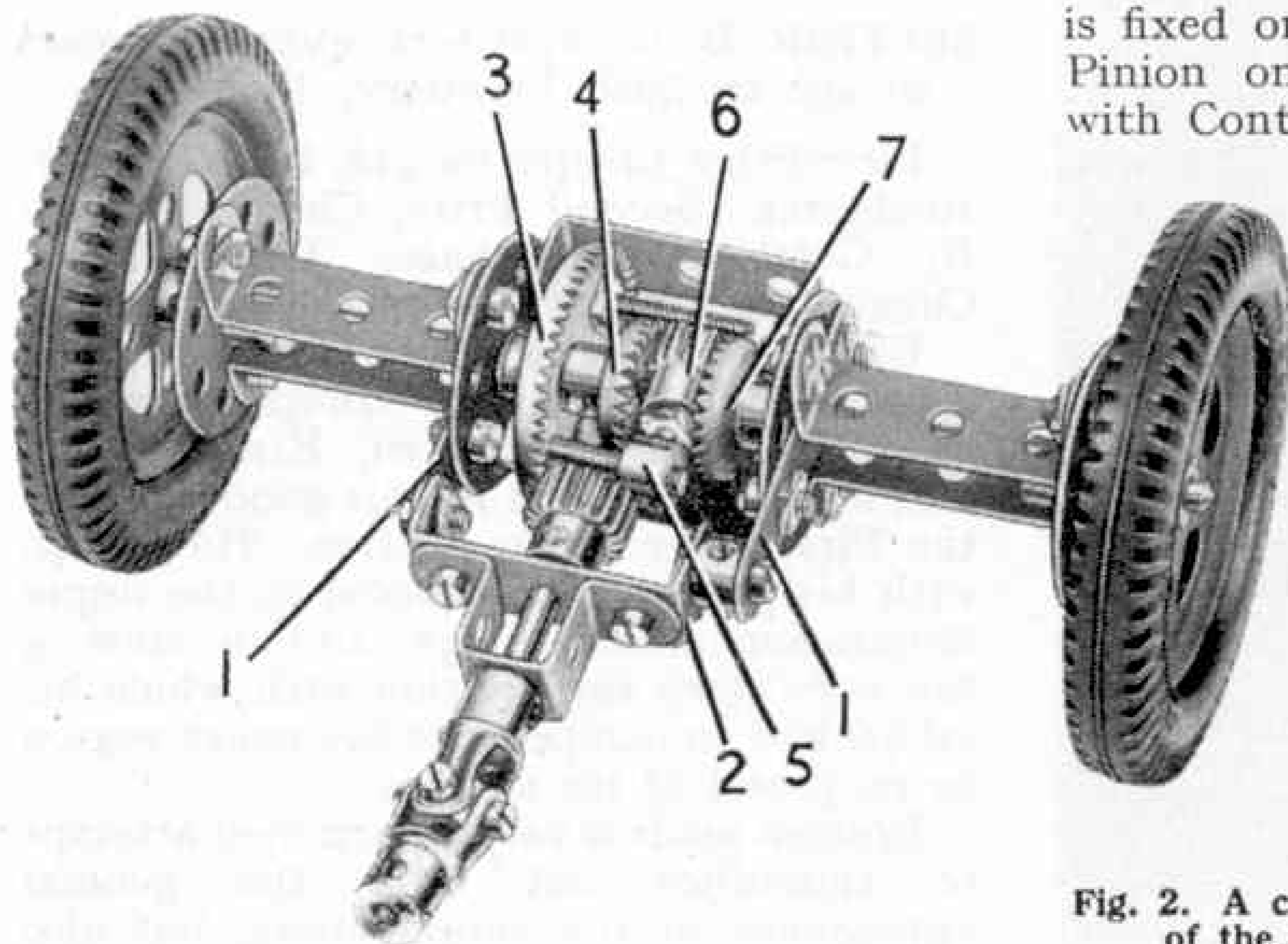


Fig. 2. A compact differential drive that makes use of the new 15-tooth Pinion, part No. 26c.

Model-Building Competition Results

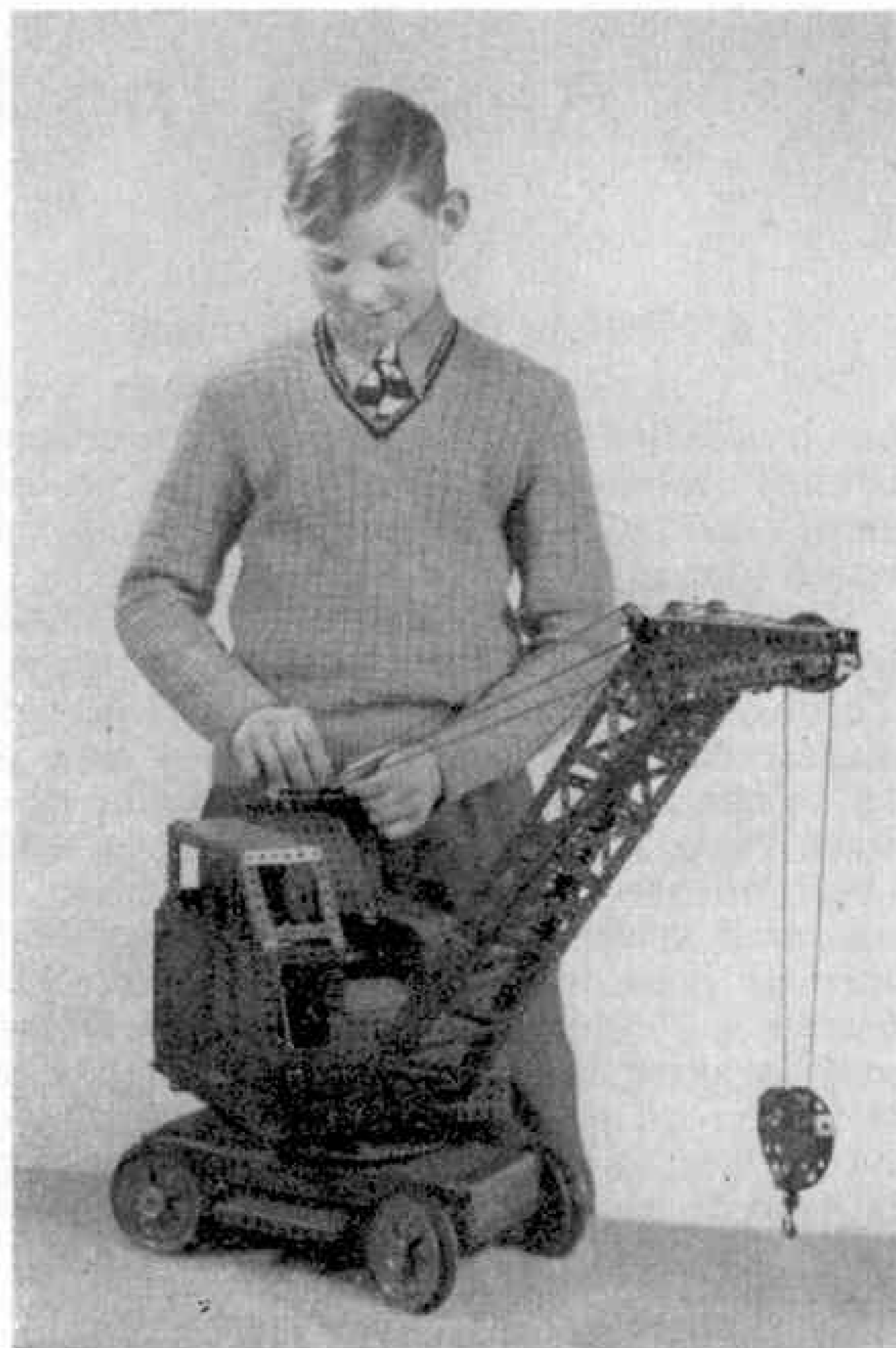
The Jones KL66 Crane Contest

By "Spanner"

IN this Competition model-builders were invited to try their skill in building Meccano models of the well-known Jones KL66 Crane, manufactured by Messrs. K & L Steelfounders and Engineers Ltd., Letchworth, one of the "600" Group of Companies of which Messrs. George Cohen, Sons & Co. Ltd., London, are the parent concern. Special Prizes were offered by Messrs. George Cohen, Sons & Co. Ltd., and Meccano Ltd., jointly, and the Competition proved most popular, some really outstanding models being received.

Unfortunately lack of space prevents the full list of prize-winners being included here, but I am giving on this page the names of those who received the principal awards in each of the two Sections

A finely detailed model of the KL66 Crane, built by N. Gottlob, Hjørtikaer, Denmark, who was awarded Second Prize in Section B.



The model that was awarded First Prize in Section A, seen with its builder, David Bretten, King's Lynn.

into which the Contest was divided.

SECTION A (competitors under 15 years of age on 28th February, 1955)

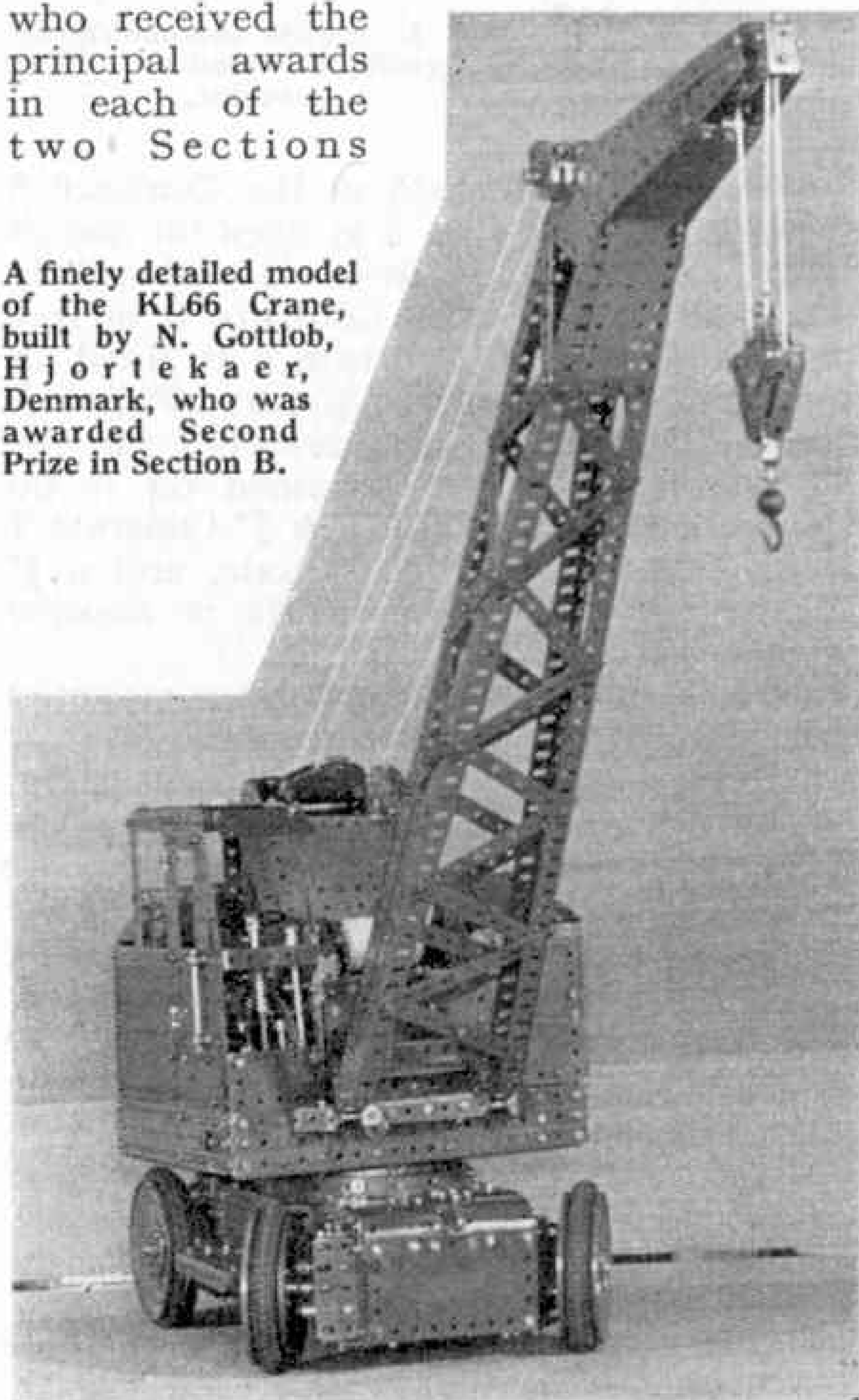
First Prize, Cheque for £10: D. C. Bretten, King's Lynn. Second Prize, Cheque for £5: M. A. Rhoades, Hull. Third Prize, Cheque for £3: B. Hawkins, High Wycombe.

SECTION B (competitors over 15 years of age on 28th February, 1955)

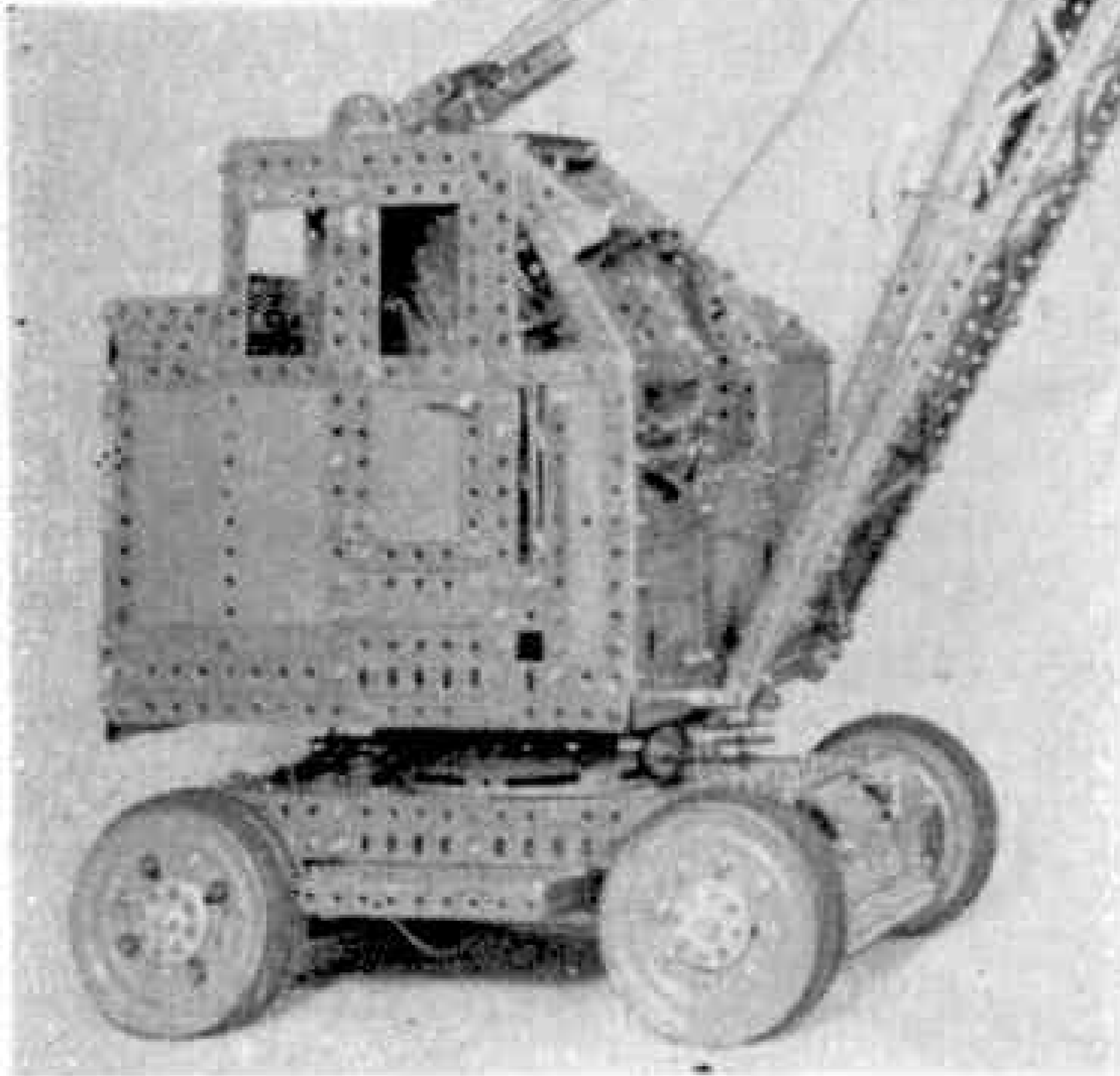
First Prize, Cheque for £15: H. W. Henry, Rochester. Second Prize, Cheque for £8: N. Gottlob, Hjørtikaer. Third Prize, Cheque for £5: F. S. Rouse, Cheltenham.

Undoubtedly the finest effort in the Section for the younger competitors was that of David C. Bretten, King's Lynn, and he was rewarded for his good work by the First Prize in his Section. He is seen with his prize-winning model in the upper illustration on this page, and in view of the very stern competition with which his model had to compete, he has every reason to be proud of his success.

Bretten made a very determined attempt to reproduce not only the general appearance of the actual crane, but also



its internal details, and in both respects he has achieved a good measure of success. Like most of the other prize-winning efforts, Bretten's model is driven by an E20R Electric Motor, which transmits through a clutch and gear-box just like the power unit of the actual crane. The



Realism and a wealth of mechanical detail combined to make this fine model, by H. W. Henry, the most outstanding in Section B, and to bring the First Prize in this Section to its builder.

drives to the two winding drums, and to the travelling wheels, also follow closely those in the real crane, and the model has a lifting capacity of 10 lb. All the controls are centred in the cab, which is provided with a hinged door to give access to them. Congratulations, David! A splendid effort for a boy only just over 13 years of age.

The other illustrations on this and the opposite page show the three models that won the First, Second and Third Prizes in Section B and I would like to say a few words about each of these.

A peep inside the cab of the attractive and detailed model sent by H. W. Henry, Rochester, who won the First Prize, reveals a compactly massed assembly of gears, clutches, controls and of course an E20R driving Motor, arranged in a neat and businesslike manner showing that its

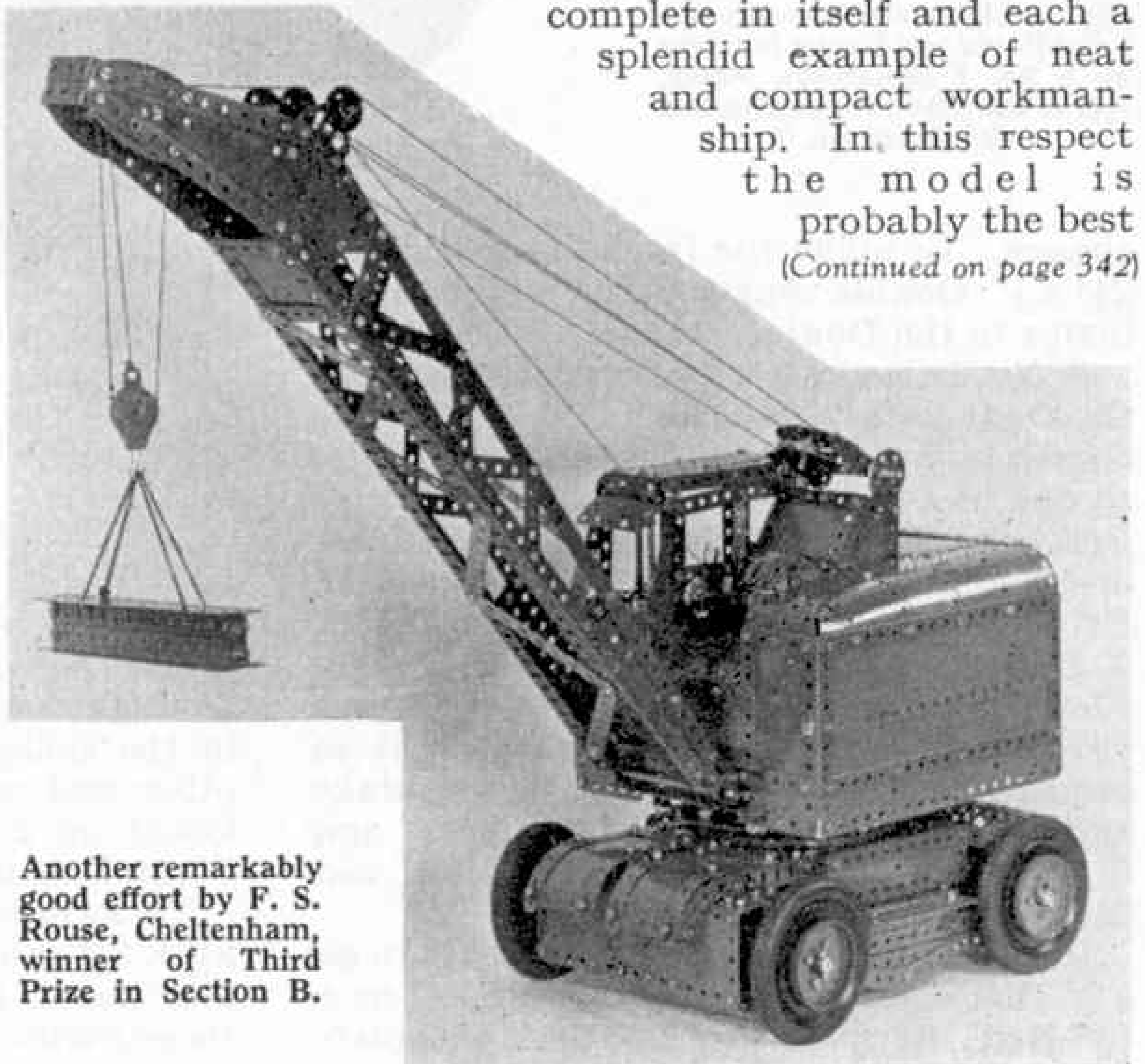
builder had studied the layout of the actual crane very closely. A feature is the inclusion of automatic brake clutches in the drives to the winding drums, so that in case of motor failure the jib or hoist cannot move when in the neutral position. The drive to the road wheels is taken through the roller bearing to a differential, and thence by Sprocket and Chain to each of the four wheels. The wheels are fitted with cable-operated brakes and efficient steering is incorporated. Another pleasing feature is to be seen in the jib bracing, which is carried out with short Rods held in Rod

and Strip Connectors attached to the jib members.

Four-wheel drive through a centrally placed differential, two-wheel Ackermann steering, two wheel brakes and full 360 degrees slewing are the main features of another very fine model built by N. Gottlob, Hjortekaer, Denmark, who won the Second Prize in Section B.

The model has other claims to distinction, however, chief among which is the fact that the entire crane is made up of a large number of units each complete in itself and each a splendid example of neat and compact workmanship. In this respect the model is probably the best

(Continued on page 342)



Another remarkably good effort by F. S. Rouse, Cheltenham, winner of Third Prize in Section B.

New Meccano Model

Land Rover and Trailer

OUTFIT No. 7 contains all the parts required to build the Land Rover and Trailer shown in Fig. 1 on this page. To make the chassis of the Land Rover bolt two $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strips between the ends of two $12\frac{1}{2}"$ Angle Girders. At the rear end attach a Large Fork Piece by a $\frac{1}{2}"$ Bolt to form the coupling for the trailer, and to the front bolt two Double Brackets. Use the bolts holding the Double Brackets to fix also two Fishplates 1. These will be used later to attach the body to the

and a $\frac{1}{2}"$ Reversed Angle Bracket bolted to the chassis, and with three Washers space the Collar from the lug of the Reversed Angle Bracket. On the lower ends of the $1\frac{1}{2}"$ Rods fix Cranks, and connect them with a $3\frac{1}{2}"$ Strip attached by lock-nutted bolts.

For the steering column mount a $3\frac{1}{2}"$ Rod in two made-up brackets formed as indicated at 5 and 6 (Fig. 2). The bracket 5 consists of a $\frac{1}{2}"$ Reversed Angle Bracket and an Obtuse Angle Bracket, and bracket 6 is made from a $\frac{1}{2}"$ Reversed Angle Bracket and an Angle Bracket. A Cord Anchoring Spring is used to hold the Rod in place and on it is placed a Worm to engage a $\frac{1}{2}"$

Pinion 7. Fix the Pinion 7 on a $1\frac{1}{2}"$ Rod mounted in a Double Bracket bolted to the chassis, and place on the Rod also a Bush Wheel with a Fishplate

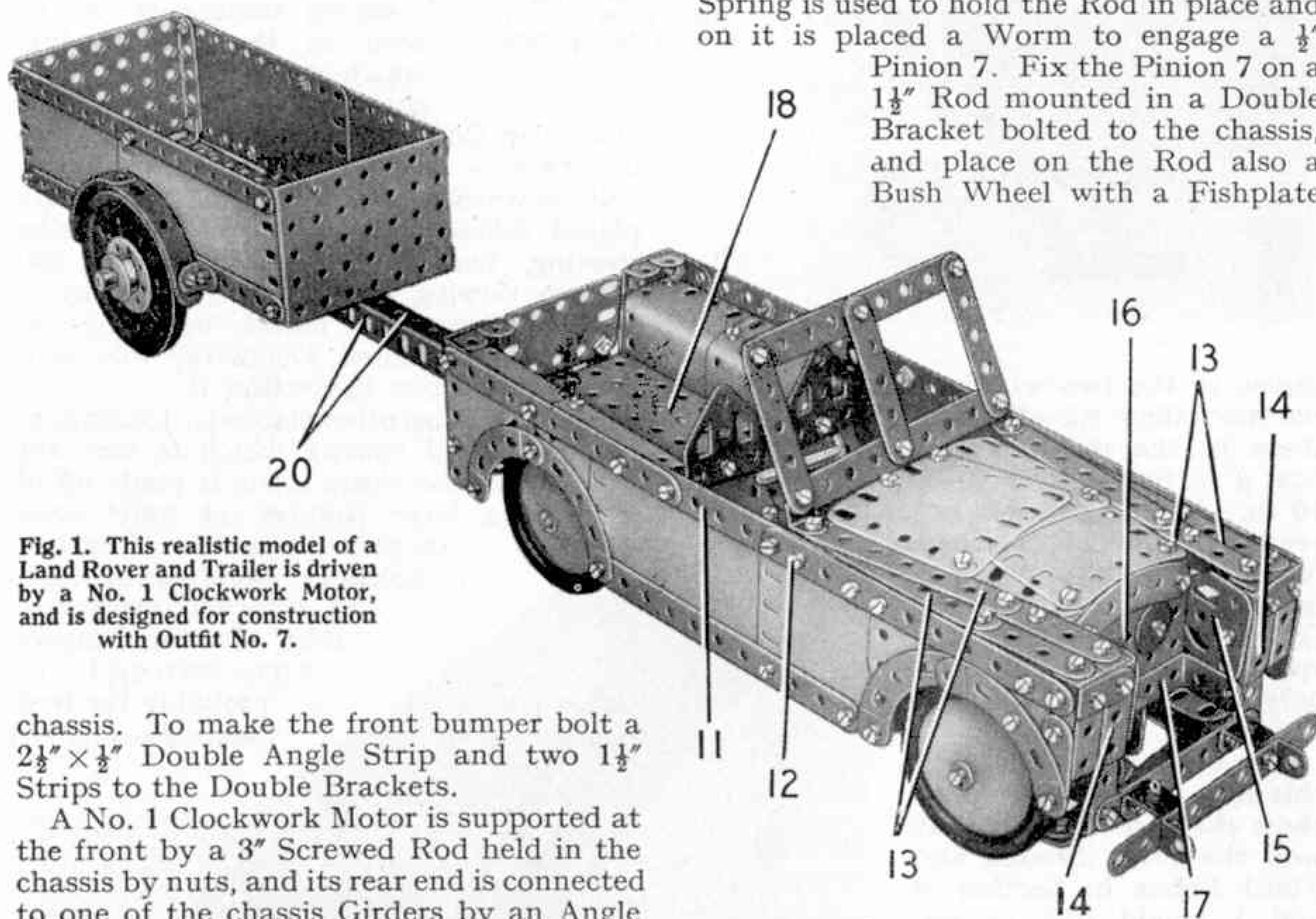


Fig. 1. This realistic model of a Land Rover and Trailer is driven by a No. 1 Clockwork Motor, and is designed for construction with Outfit No. 7.

chassis. To make the front bumper bolt a $2\frac{1}{2}" \times \frac{1}{2}"$ Double Angle Strip and two $1\frac{1}{2}"$ Strips to the Double Brackets.

A No. 1 Clockwork Motor is supported at the front by a 3" Screwed Rod held in the chassis by nuts, and its rear end is connected to one of the chassis Girders by an Angle Bracket. Fix a $\frac{1}{2}"$ Pulley on the Motor driving shaft and connect it by a 10" light Driving Band to a 1" Pulley on a $3\frac{1}{2}"$ Rod 2. A $\frac{1}{2}"$ Pinion on this Rod is used to drive a 57-tooth Gear 3 on the rear axle, for which you should use a $4\frac{1}{2}"$ Rod and fix it in position with a Collar. Extend the brake and reverse levers of the Motor by 1" and 2" Rods respectively held in Rod and Strip Connectors.

Each of the front wheels is free to turn on a $\frac{3}{4}"$ Bolt screwed into a Collar 4 fixed on a $1\frac{1}{2}"$ Rod. Support this Rod in a Fishplate

bolted to it. Fix a bolt in the Fishplate by means of a nut and then screw on the bolt a Collar 8. Now push a Threaded Pin through one end of a $2\frac{1}{2}"$ Strip 9 and fix it in the Collar 8. Pass a bolt through the other end of Strip 9 and screw it into a Collar on a Pivot Bolt. Then screw the Pivot Bolt into a Collar 10.

To form each side of the body overlap a $5\frac{1}{2}" \times 2\frac{1}{2}"$ and a $2\frac{1}{2}" \times 2\frac{1}{2}"$ Flexible Plate four holes. Strengthen the lower edges of these Plates with a $5\frac{1}{2}"$ Strip and the upper

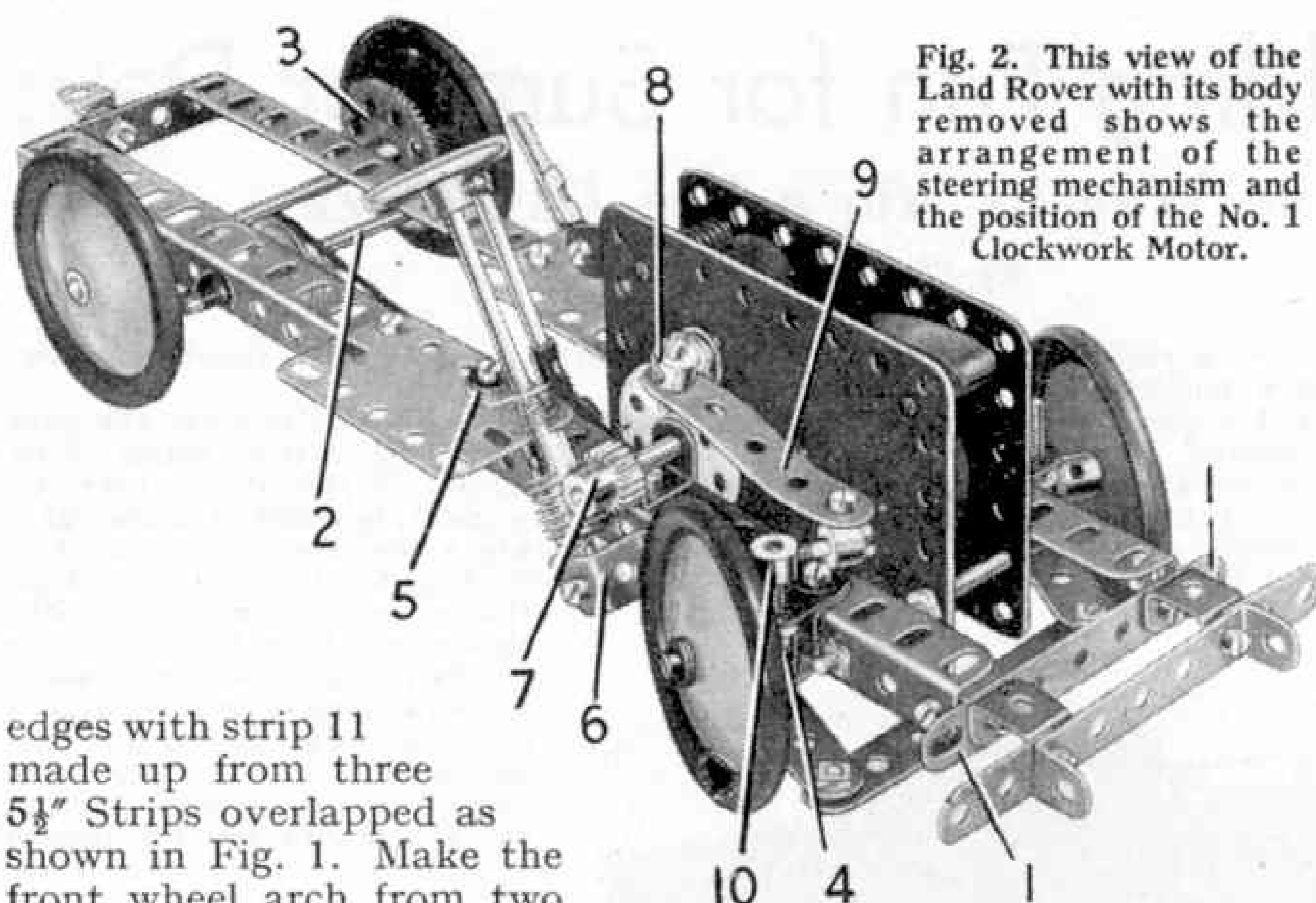


Fig. 2. This view of the Land Rover with its body removed shows the arrangement of the steering mechanism and the position of the No. 1 Clockwork Motor.

edges with strip 11 made up from three $5\frac{1}{2}$ " Strips overlapped as shown in Fig. 1. Make the front wheel arch from two $2\frac{1}{2}$ " Stepped Curved Strips. The plating above it consists of two $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Triangular Flexible Plates. For the rear wheel arch also you should use two $2\frac{1}{2}$ " Stepped Curved Strips, but in this case the plating is formed by a $2\frac{1}{2}$ " \times 2 " and a $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Triangular Flexible Plate.

You should now connect the sides of the body at the centre with a strip made from two 3" Strips overlapped three holes. Attach this to Angle Brackets held by a bolt 12 on each side, and use the bolt that connects the strip and the Angle Brackets to support also two made-up strips 13. Make each of these from a $3\frac{1}{2}$ " and a $2\frac{1}{2}$ " Strip, and at the front end of the outer one fix a $1\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip. At the front end of the inner strip 13 fix a $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strip 14. Now connect the two Double Angle Strips on each side with a 1 " \times 1 " Angle Bracket, and bolt the latter to the front end of strip 11. Fix a Trunnion to each of the Double Angle Strips 14 and to it bolt a Flat Trunnion 15.

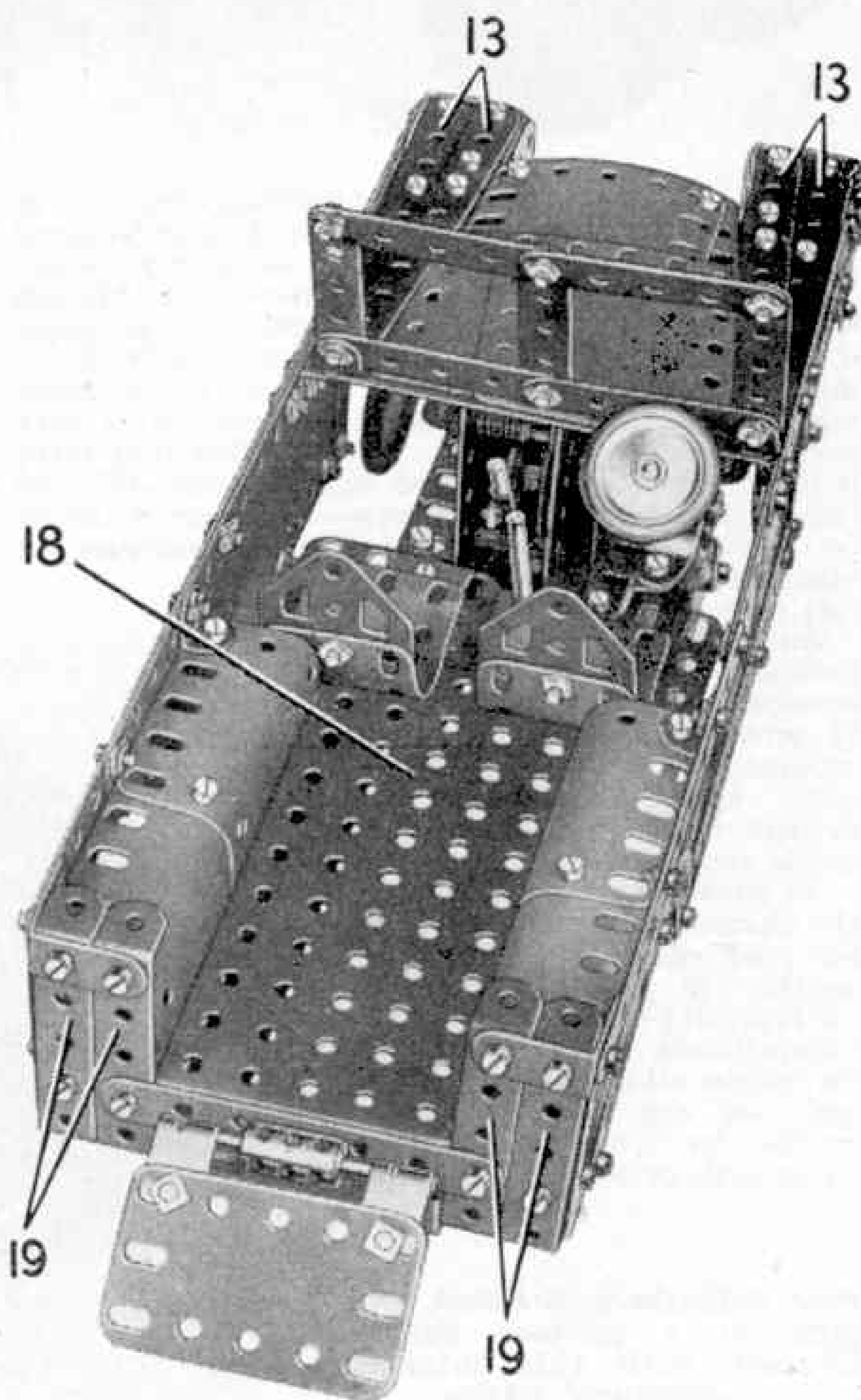
The radiator is a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flanged Plate 16 and you should connect it by Angle Brackets to the inner pair of strips 13. Bolt a $2\frac{1}{2}$ " Curved Strip along the upper edge of the Flanged Plate, and to the lower edge attach a $2\frac{1}{2}$ " \times 1 " Double Angle Strip 17 by means of a Fishplate. Make the top of the bonnet by curving slightly four $2\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plates and arrange them as shown. They should be connected to the radiator by Angle Brackets and attached by $\frac{3}{8}$ " Bolts to the strip across the centre of the body.

Fig. 3. A semi-plan view of the Land Rover, showing interior details of the body and the assembly of the hinged tailboard.

Space the Plates from the strip by three Washers on each of the Bolts.

For the boxes over the rear wheels use an opened-out U-section Curved Plate and a bent $1\frac{1}{8}$ " radius Curved Plate bolted together. Attach each box to the side of the body by means of an Angle Bracket, and bolt it also to a $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plate 18 that forms part of the floor. Now join two $2\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips 19 on each side by a Fishplate and one arm of a 1 " \times 1 " Angle

Bracket. Use the other arm of the 1 " \times 1 " Angle Bracket and a $\frac{1}{2}$ " \times $\frac{1}{2}$ " Angle Bracket to attach the Double Angle Strips 19 to the side of the body. Bolt the inner one of each pair of Double Angle (Continued on page 342)

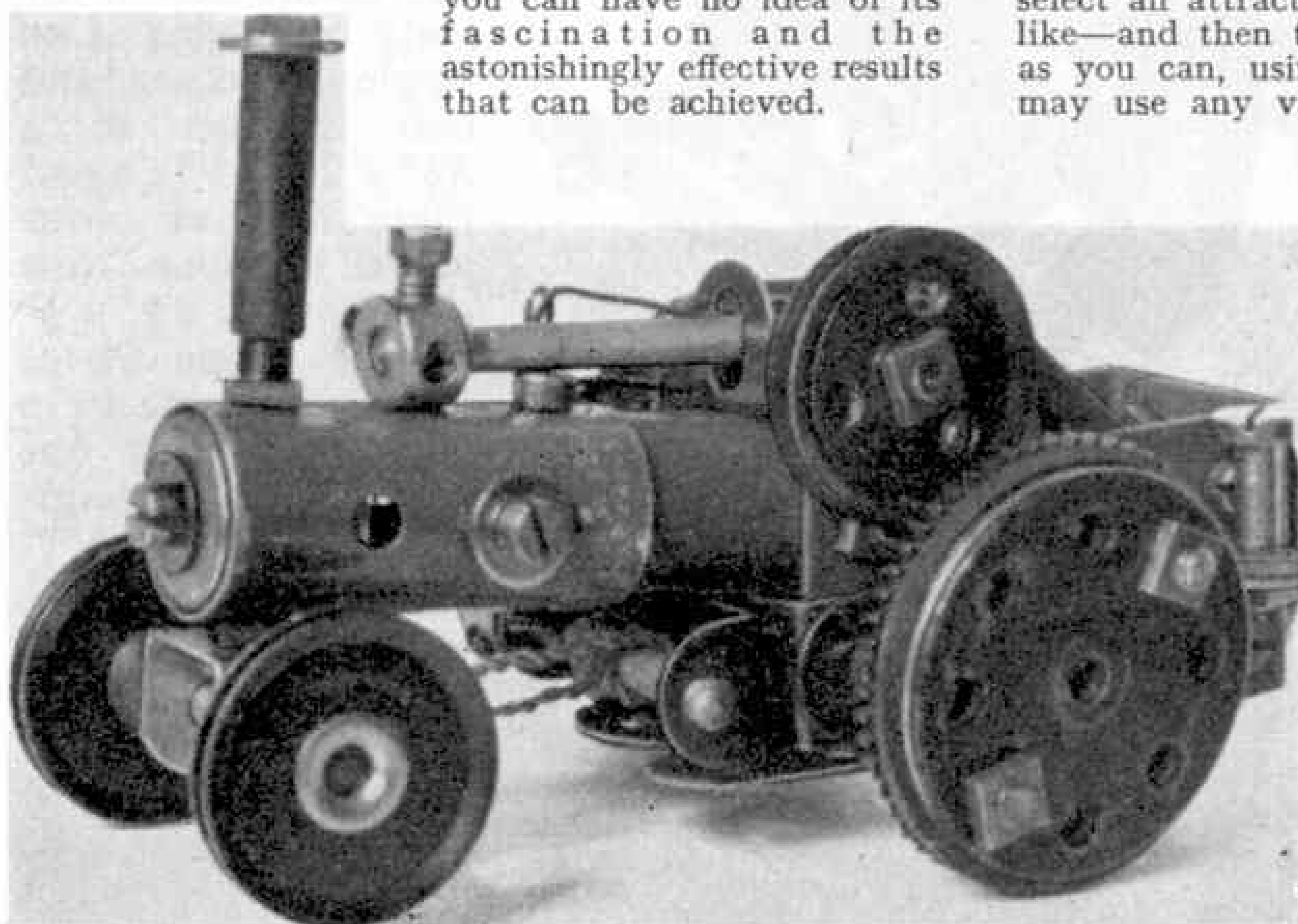


Model-Building Fun for Summer Days

A Simple Way to Win a Fine Cash Prize

By "Spanner"

HAVE you ever tried to build a realistic model using the smallest possible number of parts? Believe me, it is great fun, and if you have never experimented in this way you can have no idea of its fascination and the astonishingly effective results that can be achieved.



I call this "simplicity" model-building, and to give you some idea of the type of thing I have in mind I am illustrating two examples of simplicity models on this page. You will notice from these that although each model contains only a mere dozen or so parts, it has an air of reality about it and there is no mistaking what it represents. There is so much fun in this kind of light model-building that I urge everyone to give it a trial. You will find that there is plenty of scope for you to exercise your skill and ingenuity in using Meccano parts—and there is almost no limit to the range of subjects, humorous or otherwise, that you can model in this way.

Another point is that model-building of this kind is specially suitable for the summer months. It provides a pleasant means of occupying yourself during a short rainy spell when you cannot indulge in your normal summer sports and other outdoor activities.

To encourage you, and give you the chance of earning a fine prize for your efforts, I am organising another of the always popular "Simplicity" Model-Building Competitions. This will be open for entries all through the summer, and you can send in as many entries as you wish. Worthwhile cash prizes will be awarded

for the best entries received, and details of these follow.

I want you to be quite clear as to what you have to do if you want to win one of these prizes. First select an attractive subject—it can be any type you like—and then try to make as simple a model of it as you can, using only a few Meccano parts. You may use any variety of parts that you wish from the entire Meccano range. The important thing is to use the smallest number of parts possible while making a model with a good real look. If you find that by adding one or two more parts you can greatly improve the appearance and life-likeness

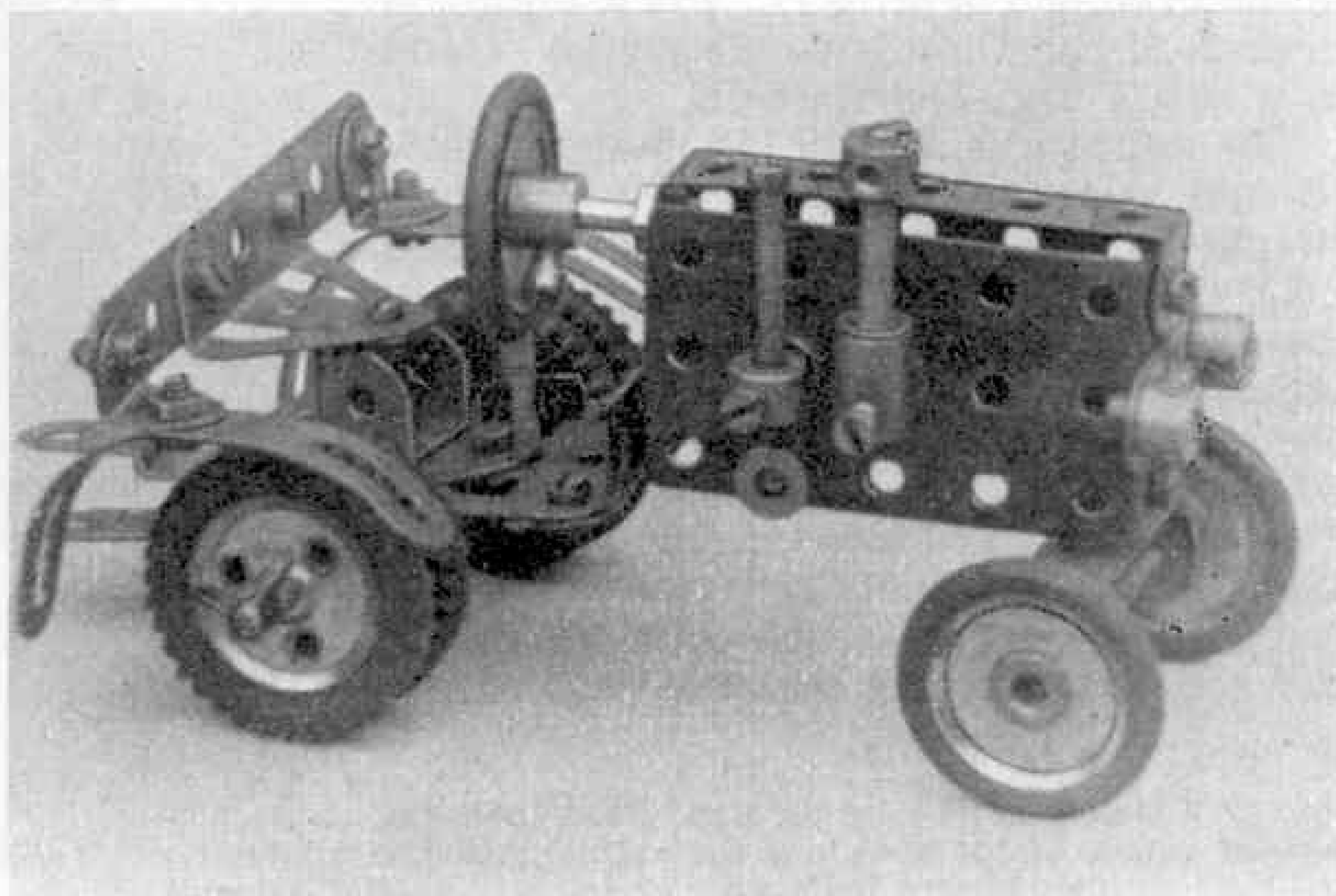
A remarkably realistic "Simplicity" traction engine, built from very few parts by S. J. Newman, Swanley, Kent.

of your model, then you should use them.

When you have made a model—or more than one if you like—make a good sketch of it or obtain a photograph, and send this to "Simplicity Model-

Building Competition, Meccano Ltd., Binns Road, Liverpool 13. Don't forget to write your age, with your name and address, on the back of the sketch or photo. This is most important. Entries may be sent in at any time up to 31st August next.

If you will be under 12 years of age on 31st August next your entries will be placed in Section A. If you will be 12 or over your entries will go into Section B. The Prizes will be as follows: First, Cheque for £4/4/-; Second, Cheque for £3/3/-; Third, Cheque for £2/2/-. There will be also Five Prizes of £1/1/- and Ten, each of 10/6, in each Section.



Fred Willingham, Bradford, won a prize in a previous Simplicity Contest with this miniature agricultural tractor.



Club and Branch News



WITH THE SECRETARY

CLUB SECRETARIES, PLEASE NOTE!

Some Club Secretaries, in their desire to give me a full account of the Club's activities during the month, write their reports on notepaper instead of using the official Report Forms available from Headquarters. These detailed accounts are always very welcome, and are much appreciated.

The Report Forms have on the front, however, provision for the Secretary to record the name and address of the President and of the Leader, as well as of himself, and to give the latest Club roll and attendance figures. Alas, when notepaper is used this useful information is omitted, apart from the Secretary's own address. In consequence, I am unable to keep up to date my records of the Clubs concerned, and summaries of their activities published in the *M.M.* have to appear without mention of the Club roll.

So please remember to give me these details when you write your report on notepaper instead of on the official Report Forms.

Sometimes a very full report will cover most, or all, of a single Session's programme. This of course brings my records of that Club's activities up to date at one bound, so to speak, but it would probably need nearly half a column of this page to give a fair summary of a long report of this kind. The result is that much of the interesting information it contains has to be omitted, and only the most recent activities mentioned on this page. It will be seen from this that regular monthly reports are much better all round, and they are also easier for the Secretary to write, as the events he has to report are still fresh in his mind.

CLUB NOTES

CONSETT AND DISTRICT Y.M.C.A. M.C.—The large model colliery, with underground workings, is almost completed. Members recently visited Newcastle and looked round the Municipal Industrial Museum, afterwards visiting the St. George's M.C. Annual Exhibition at Gateshead. Construction of the model railway is progressing, and the Scenic Corner is being developed satisfactorily. Club roll: 35. *Secretary:* B. Ward, 10 Cyril Street, Number One, Consett, Co. Durham.

EXETER M.C.—Extensive model-building has been continued, outstanding models completed being a helicopter, motor-operated drilling machine, and a military tank. Club roll: 20. *Secretary:* C. Willis, 23 Hanover Road, Heavitree, Exeter.

LAUNCESTON M.C.—Model-building, Table-Tennis, etc., have been continued. An interesting talk on *Life in Ceylon* by Mr. Saunders, Physics Master at Launceston College, and another, on *Radio Control and Television* by Mr. T. Chapman, a local radio dealer, were much enjoyed. Films loaned by the Dunlop company and

dealing with motor and cycle racing have been shown. Club roll: 63. *Secretary:* R. J. Keast, "Lytham," Dunheved Road, Launceston, Cornwall.

MILE END (PORTSMOUTH) M.C.—The fifth Anniversary party was a great success. Preparations for an Exhibition included further additions to the Club's model town. Club roll: 24. *Secretary:* Mr. A. J. Nicholson, 213 Sultan Road, Portsmouth.

NEWTOWN SCHOOL (WATERFORD) M.C.—A most successful Exhibition has been held, at which ten models were displayed. Club roll: 10. *Secretary:* F. French, The Blue School, Drogheda, Co. Louth, Eire.

BRANCH NEWS

KENTISH TOWN (LONDON)—Several improvements have been made to the Branch layout. The Chairman is constructing a scale model steam locomotive that will weigh about 1½ cwt. when completed. Some experimental printing has been done with the Branch printing machine. New members will be welcomed. *Secretary:* J. A. Kirby, 9 Busby Place, Kentish Town, London N.W.5.

HALE END (LONDON)—A larger Branch room has been obtained, and members have been busy erecting the baseboard for the new and more extensive layout now possible. Track meetings will be resumed as soon as the layout is sufficiently ready. *Secretary:* A. Coe, 463 Hale End Road, Highams Park, London E.4.

EDLINGTON COUNTY SECONDARY SCHOOL—Several new members have been enrolled. The Branch layout has been extended. Parents, relatives and friends of members were invited to a recent Open meeting, when the complete Branch layout, plus equipment kindly lent by several members, was on show, and a programme of continuous train running carried out. Photographs were taken by the local press. *Secretary:* A. Wilson, 65 Tenter Lane, Warmsworth, Doncaster.

NEWPORT (I.O.W.) CHURCH OF ENGLAND BOYS' SCHOOL—Attendance has continued good. At recent meetings members have been divided into three groups, each group doing a different kind of job, such as constructing a bridge, erecting signals and stations, or carrying out other developments to the Branch layout. *Secretary:* E. Cousins, C. of E. Boys' School, West Street, Newport, Isle of Wight.



One of the enthusiastic football teams associated with the Exeter M.C. Mr. M. C. Hodder, Leader of the Club, is on the extreme left.

HORNBY RAILWAY COMPANY

By the Secretary

There-and-Back on a Dublo-Layout

I KNOW that most of you like to read about the layouts belonging to other readers and Hornby-Dublo owners and I am sure many of you appreciate such accounts all the better if they include a layout diagram. This month I am able to meet your wishes in this respect, and I am all the more pleased to be able to do so because the layout is a specially interesting one that gets away somewhat from the almost inevitable oval formation. It is true that the railway does include a double track main line of this familiar

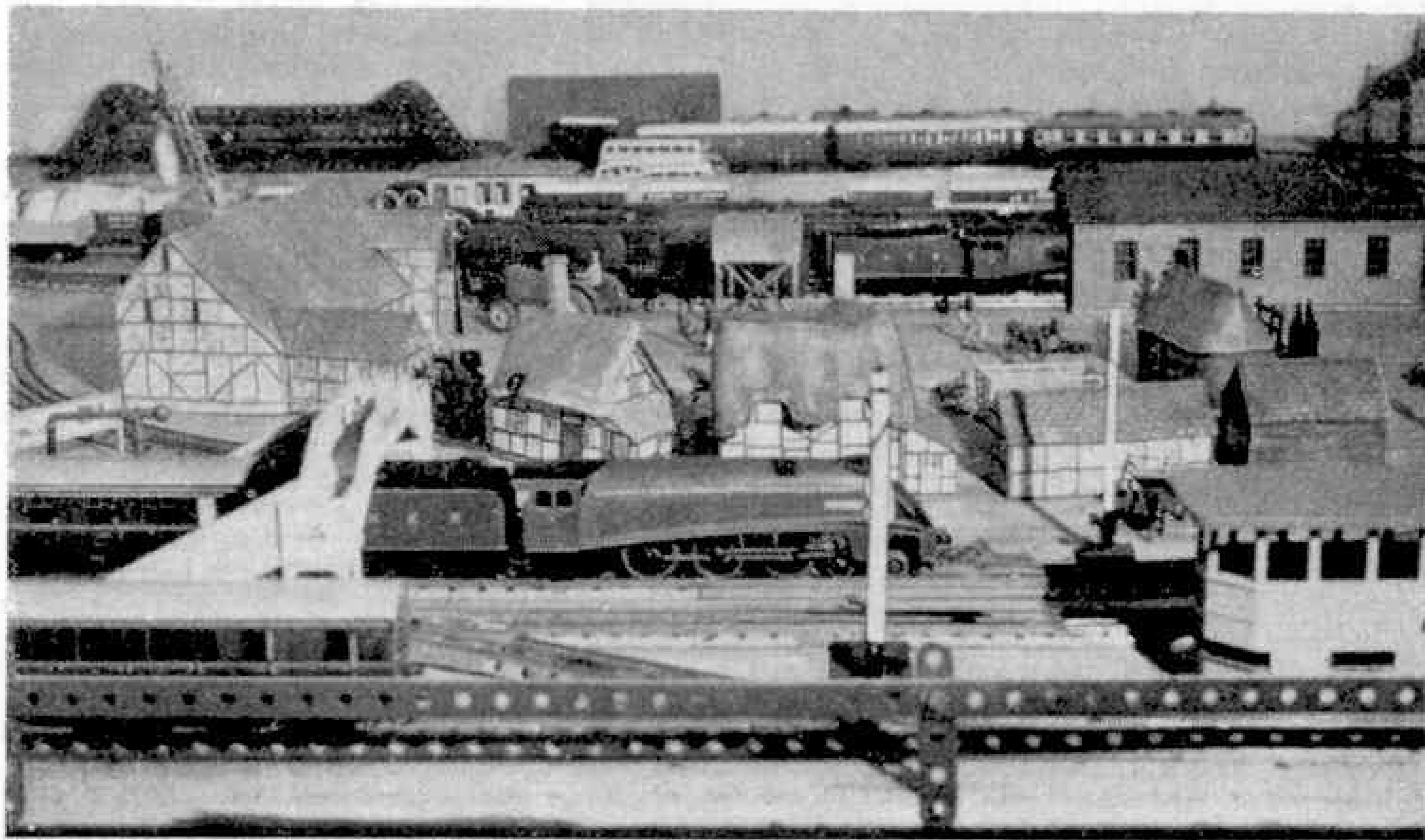
Looking across the layout of David P. Obrey, Birmingham. A bridge built of Meccano Parts can be seen in the background.

shape. But there are extensions to it both inside and outside the main tracks, and these add considerably to the interest and usefulness of the layout.

The system has been developed by *M.M.* reader David P. Obrey, of Birmingham, who tells me that although he has been busy with his railway for some years he does not regard it as finished by any means yet! It is easy to imagine the building up of the track by looking at the diagram, and the other pictures on these two pages certainly show that the system has grown up in an attractive and realistic manner and possesses real character.

Let us look at the line at close quarters, so to speak. The whole system is supported on a wooden baseboard of generous dimensions. Instead of the usual timber supports or trestles beneath the board, there are lengths of steel angle of a special constructional type. This material makes adjustments and alterations easily possible.

Let us trace the path of a train beginning its journey from the station in the upper left hand corner on the diagram. The station here lies at an angle to the running track and there are two sidings parallel to the platform line, the whole arrangement making very good use of the space available in this particular corner. A short distance from the station the single running line crosses a Meccano bridge spanning a gap left between two parts of the baseboard.



Following the train along this terminal branch, we find that it reaches an important passing station. Here the terminal branch is connected to the main line by two separate crossover connections. It reaches the outer main track by means of the crossover to the left of the Island Platform that forms part of the passing station. Another crossover at the right hand end of this platform leads from the branch to the inner main track. Once on the outer main line, and running clockwise in the usual way, as many circuits as the operator requires may be made.

The train can, if necessary, end its journey at the passing station, but if it does not do this it is quite easy to get it back again to the point from which it started. After leaving the Island Platform it passes over the first set of Points, which lead over the inner main track by means



A busy moment at the principal main line station. An express train is alongside the main platform, and a suburban train is just drawing in. On the centre road the last few vehicles of a goods train can be seen.

of a Diamond Crossing. The train is now on the inner single track curve. Making use of the diagonal track leading across the main oval it can rejoin the main line, but this time the inner main track is involved and the train is now running round in the opposite direction—counter clockwise. Any number of circuits of this inner main track can be made, but when the train is due to return to the outer branch, and so get back to the terminus from which it started, it has to cross from the inner main track to the terminal branch.

All sorts of variations in running can be devised in working from station to station,

town section, located to the left of it, from the countryside and farming area that is situated to the right of it as you look at the diagram. This is quite a good arrangement. The two sections are connected by means of a Level Crossing, and the railway effectively provides the division between the town section and the country, not always an easy thing to arrange in miniature.

Dinky Toys are well in evidence on the layout and miniature cut-outs of the "Bilteezi" variety provide much of the miniature town.

In an interesting note from the owner I read that future plans may include the provision of a carriage works for rolling stock repairs and maintenance. This is a feature that is not often found on a miniature

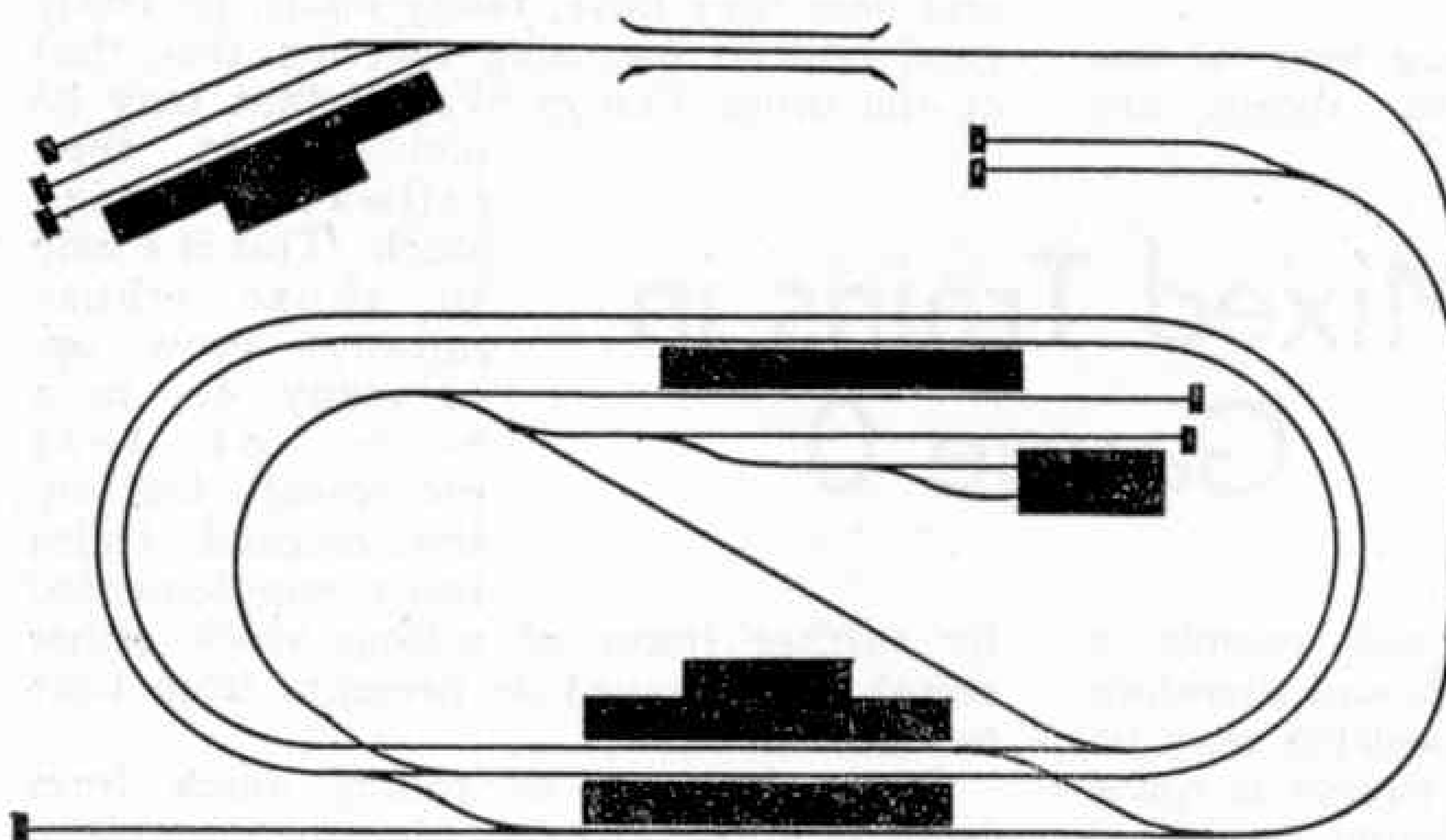


Diagram of the layout described in this article. It is well laid out for continuous or "there-and-back" working.

system, possibly because the real establishments are not as well known as engine sheds are. Although there is one of the

particularly as there are an Island Platform, serving the inner main track, and a dead-end road, intended as one of the goods sidings, almost in the centre of the system.

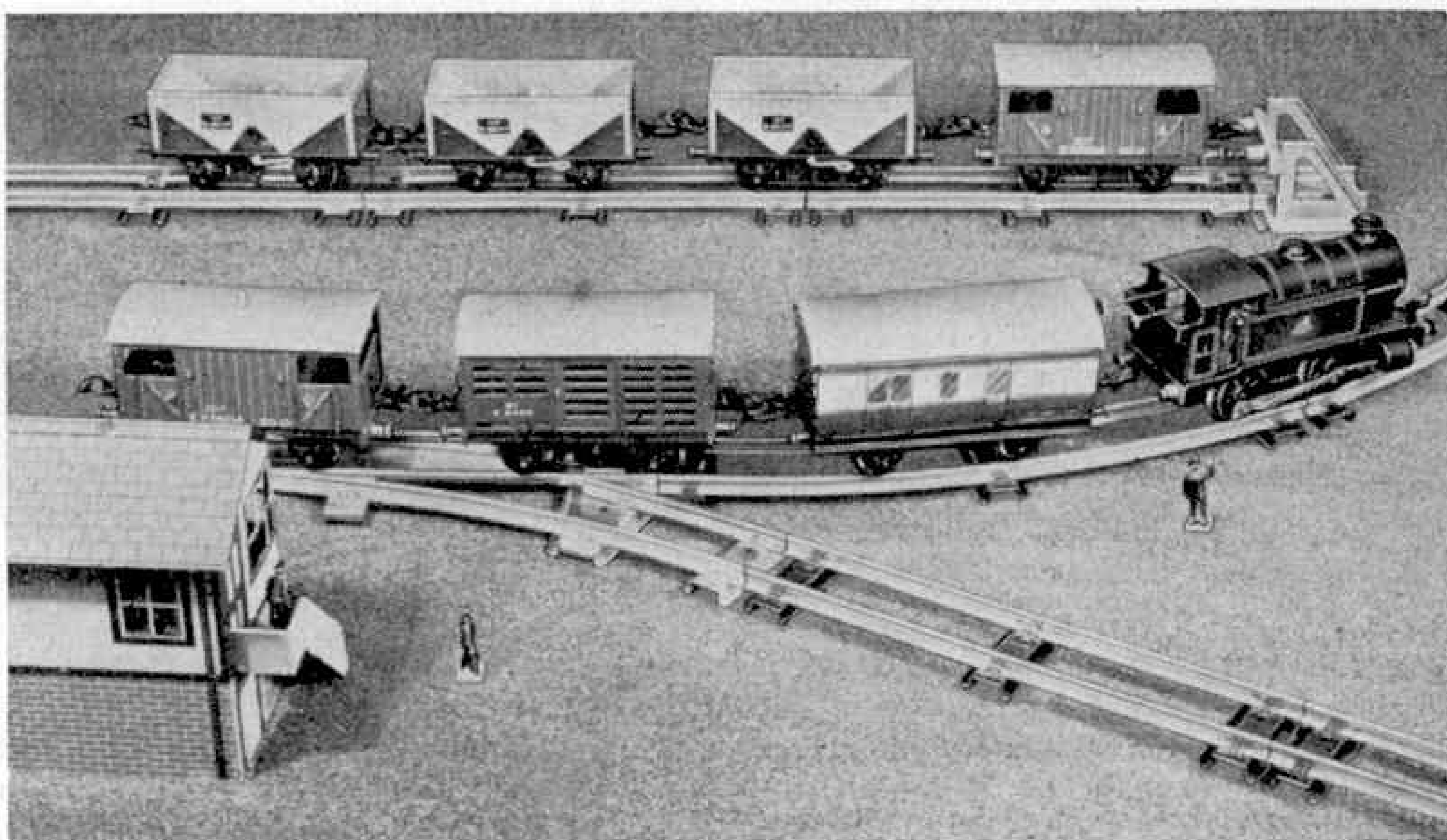
Beyond the through station a terminal branch is extended to form a siding serving a works, quite a nice idea that provides for inward and outward traffic. Goods sidings and locomotive roads that finish up in an engine shed, occupy the right centre of the system within the main oval. The diagonal track divides the

latter on this miniature railway a larger one is planned.

Probably this will involve additions in the locomotive yard, such as a road for "loco coal" wagons. There is already an example of special sidings for particular traffic in the shape of the two roads that turn off the terminal branch at the right hand end in the diagram. These are reserved for Petrol Tank Wagons.

I hope that we shall hear more about this railway as it develops.

A short goods train is taking a Passenger Brake Van down the line for special traffic purposes.



MOST Hornby railway owners make up their trains in a fairly uniform manner, adding from time to time similar components to those that are received in the Train Set that almost always starts off a railway. The sight of such trains, uniform in stock and colour, is very satisfying and they have the air of representing the important services on the line.

While this sort of running may be the aim with passenger trains, things are somewhat different where goods trains are concerned. It is fine to be able to run a complete train say of Refrigerator Vans or special vehicles for other traffic, but on many Hornby railways the restrictions of space do not permit a large amount of rolling stock and therefore trains of more varied composition may be the general rule. This of course is quite in keeping with what is found in actual practice. Many goods trains carry a multitude of freights and the vehicles used are varied accordingly.

The miniature railwayman with a layout of moderate size—and he is in the majority nowadays—may perhaps wonder just how he can run trains that are realistic with the small amount of rolling stock that he necessarily has. To begin with, passenger train loads can be fixed and in this way there will be no excess of passenger type vehicles. In fact some of them can be used at times for purposes other than

passenger train formation and the keen observer of real railway practice will see plenty of examples of what are apparently odd combinations of vehicles running quite happily together. Parcels, certain kinds of mail and seasonal traffics such as fruit and flowers account for many of these odd formations. Peculiar combinations appeal to many miniature railway operators and here they have, ready-made, perfectly good reasons for using together this, that or the other Van or Wagon that may be

included in their railways' rolling stock. This is a help to those whose railways grow up, as many do, in a more or less piecemeal fashion, the original trains being supplemented

by further items of rolling stock either bought or received as presents from time to time.

The movement of rolling stock from point to point for particular purposes often accounts for strange formations that in the ordinary way would be turned down as suggestions for possible trains to be run in miniature. There is therefore plenty of excuse for such a train as that shown at the top of this page. The important-looking Passenger Brake Van No. 51 is required down the line and it is therefore being sent along by attaching it to the very simple empty train consisting of a Milk Van and a Goods Brake. Rolling stock requiring attention at a carriage or wagon

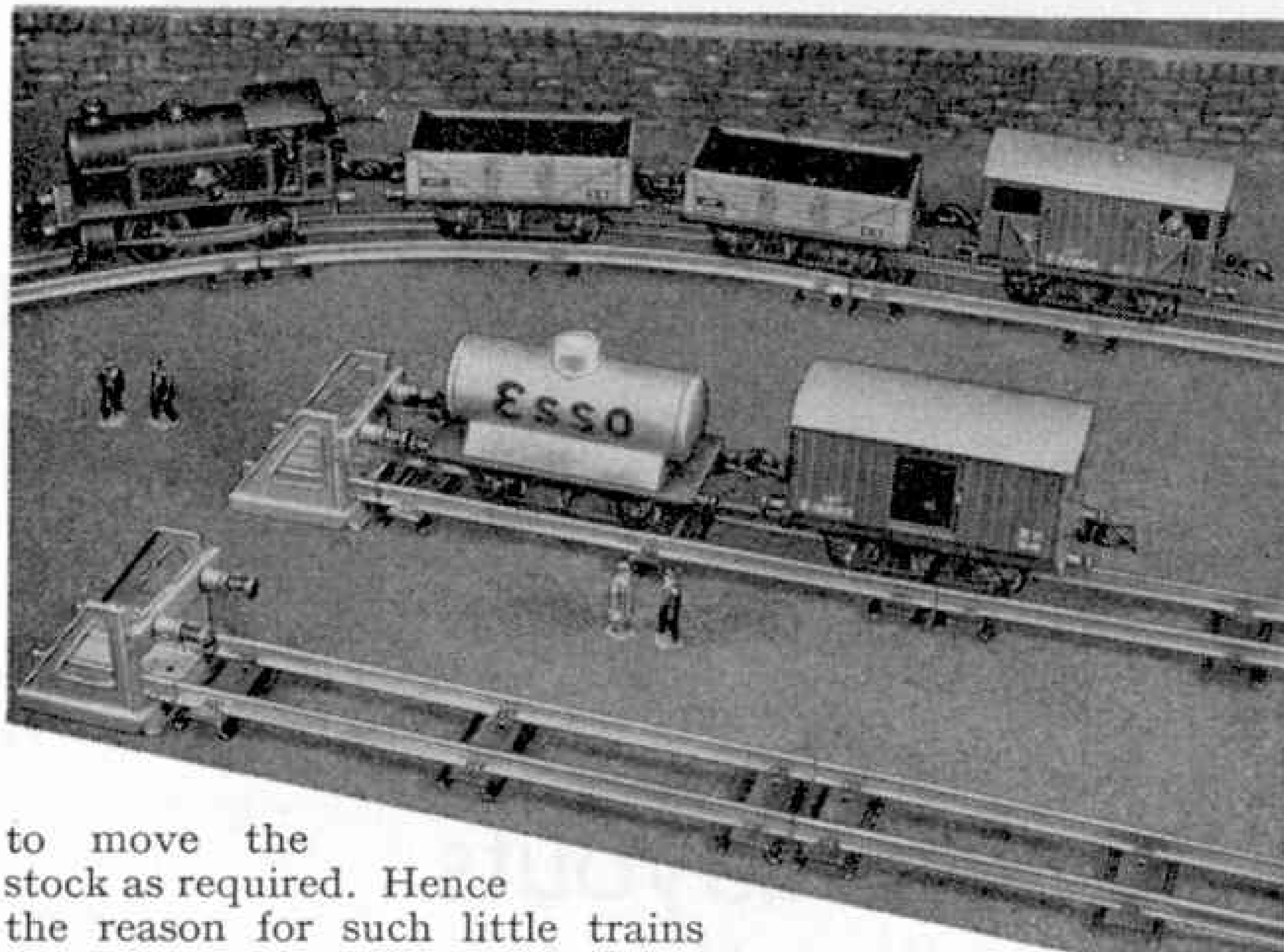
Mixed Trains in Gauge 0

works is sometimes conveyed in this way.

Not all trains run long distances, but some, particularly those not connected with passenger traffic, work from point to point in a particular district either for the purpose of picking up traffic or simply

standing, as vans often do in actual practice, with its doors open, a little touch that adds to the realism of the scene. Try it the next time you are busy in your goods yard.

Notice, too, an item of equipment that should be found in most yards, the Water Tank. Although there will most likely be one of these in the locomotive sidings or perhaps by our station platform, we should



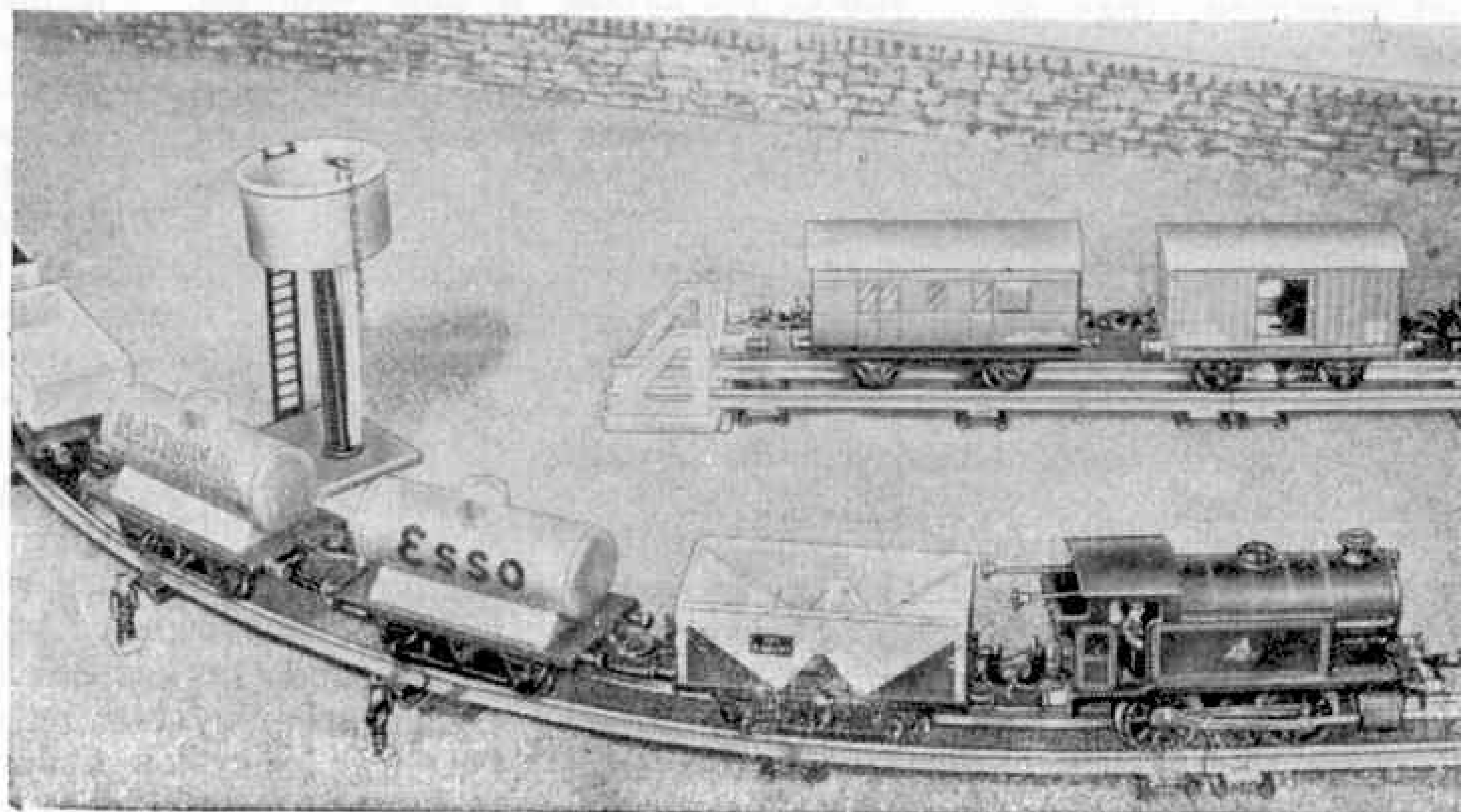
Here empty wagons in charge of a Hornby No. 40 Tank Locomotive are on their way to join others in making up a full train.

to move the stock as required. Hence the reason for such little trains as that shown above, where two Wagons No. 1 are followed up by the usual Goods Brake. Perhaps the wagons are empties from the locomotive yard where they have delivered "loco coal," although actually the imposing Hornby Hopper Wagons are really better for this purpose. On the other hand they may be required to help make up a train elsewhere, and in the illustration they are on their way.

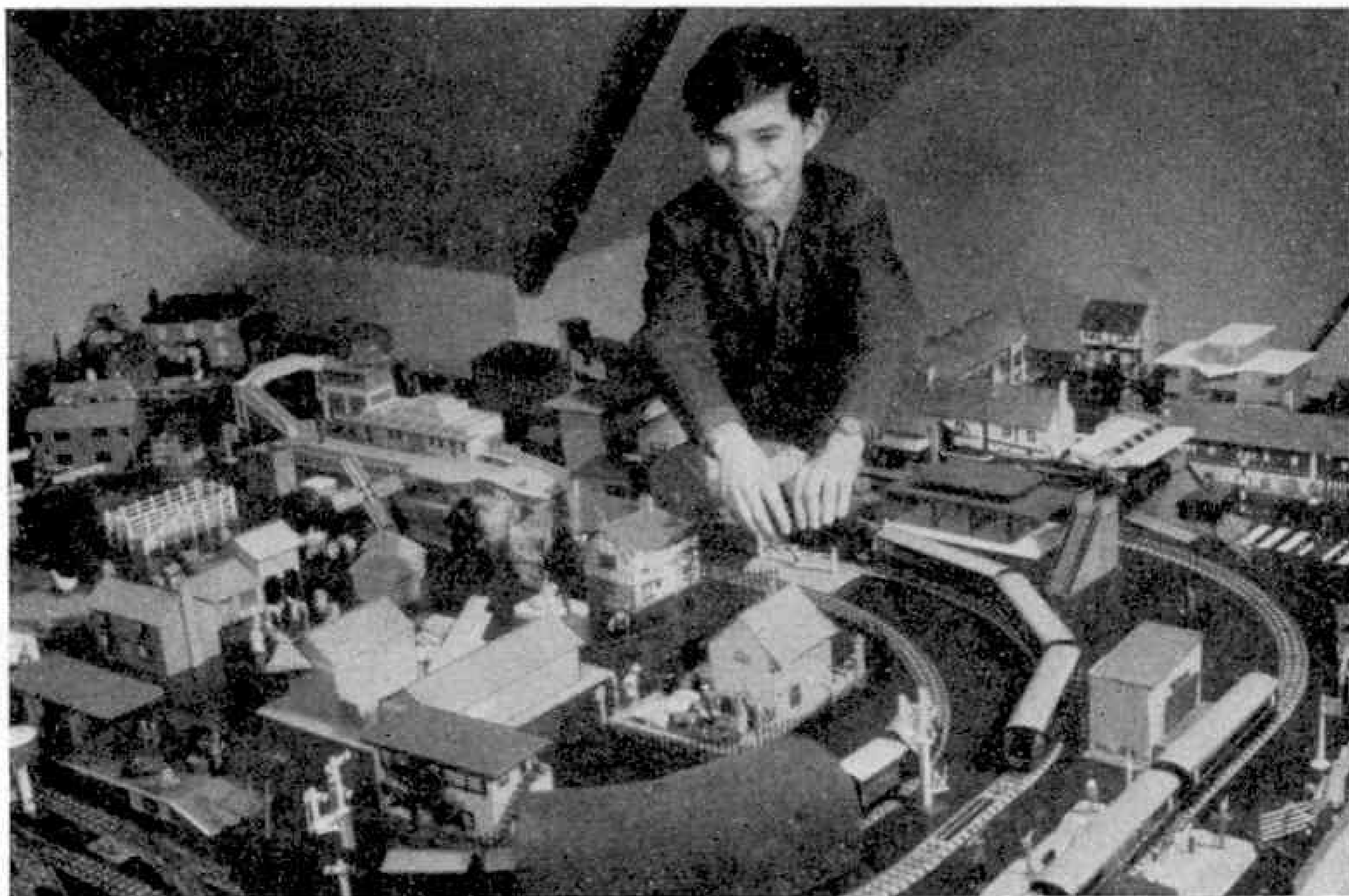
Below is a more miscellaneous train including Tank Wagons, a type very dear to most Hornby railway owners because they are quite a different shape from the usual run of goods stock. As the train leaves the yard where it has been standing, notice the two Vans in the background. One is a Passenger Brake Van No. 50, but next to it is the ordinary Hornby Goods Van. The latter is

try to provide one in the goods yard as well. This enables the engines shunting there to "fill up" without having to leave the job from time to time in order to go to the engine yard or station. A Water Tank is not essential where the motive power is clockwork, but of course it is an attractive accessory that looks well alongside the line.

Another point; most railway owners make good use of the Dinky Toys figures of railwaymen on stations, but forget to place them in shunting yards and elsewhere. A few of the staff "on the ground" make all the difference to lineside life. Choose your figures carefully and the railway will have a much more populated look.



A mixed train of freight stock leaves the yard.



Character in Layouts

Two Interesting Hornby-Dublo Schemes

ALTHOUGH Hornby-Dublo equipment is standardised, and we might therefore expect one Hornby-Dublo layout to look very much like another, this does not seem to happen, as readers will no doubt agree. Even when the track plan of two systems is identical, there can be a great deal of difference between their general effects. Layouts indeed are as individual as their owners, on whose ideas, and the conditions in which they are installed and operated, they so largely depend.

Their varying characters add considerably to the interest of the systems described regularly in the *M.M.* A glance at the readers' railways illustrated here and on the next page makes this immediately apparent, especially as in each case circumstances have affected the final layout scheme.

The layout shown on this page can be regarded as a genuine table-top system. It belongs to Warwick Elwood, of Lowestoft, H.R.C. 257336, who has been able to set out a railway consisting basically of three continuous tracks. These are connected, so that running from one circuit to the

other is readily possible. In addition, there are various sidings useful for the storage of rolling stock or of trains not actually running. Special care has been taken to arrange the railway as a whole so that it looks realistic, and the generally attractive effect is quite remarkable.

A really good collection of miniature buildings makes up the surroundings of the line. These appear not only in the centre of the layout, where most items of this kind are concentrated as a rule, but also in suitable places on the outside of the main track. Typical village and farm

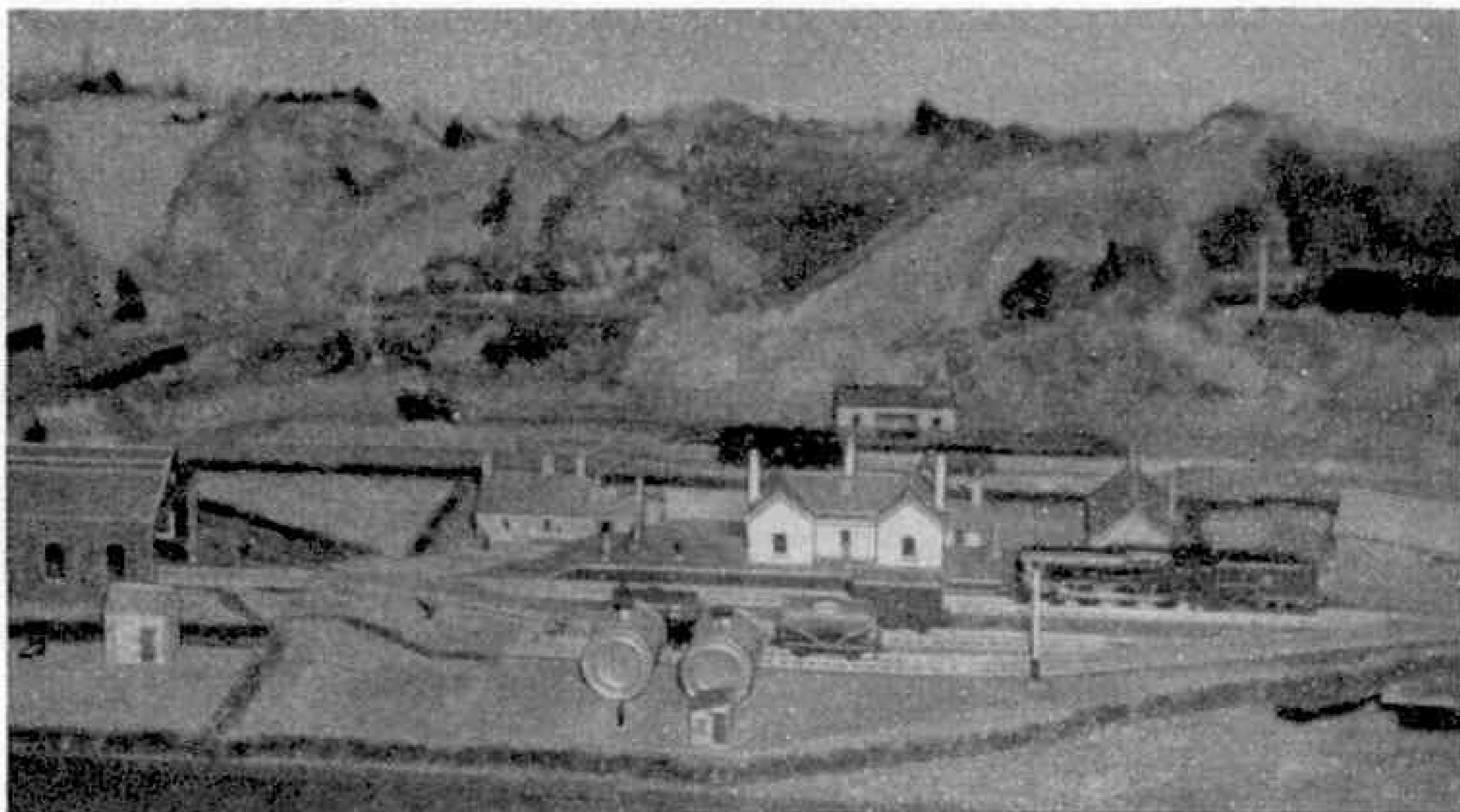
buildings are included, with a windmill—rather scarce nowadays—and a miniature church. Some of the items have been made at home and some have been bought, but they have been so assembled that they blend together very well. As is only to be expected on a rather small layout, the various buildings are necessarily crowded together somewhat, but this cannot be helped and the general effect is pleasing.

The other system referred to belongs to Dr. C. Jansz of Colombo, Ceylon. An important requirement in the building up of

Above, Warwick Elwood, of Lowestoft, H.R.C. No. 257336, is busy with his Hornby-Dublo railway, which includes a remarkable selection of lineside buildings and equipment. Photograph by Ford Jenkins, Lowestoft.

this layout has been that it should be portable as a whole, and yet be made ready for use quite quickly. It is portable in the sense that the railway is not a permanent installation on a baseboard. But when not in use the system does in fact remain in position in sections, for the whole thing is accommodated inside a special

A view across the layout of Dr. C. Jansz, which folds up when not in use.



folding case. This is 8 ft. long, 2 ft. high and 2 ft. across when the whole affair is folded up. The case is hinged lengthways and is arranged in such a manner that when it is opened out for operation one side appropriately forms a background for the scenic work that is a feature of the layout. The opposite side corresponding forms part of the base, as does the box top, and on this latter section are situated the control arrangements.

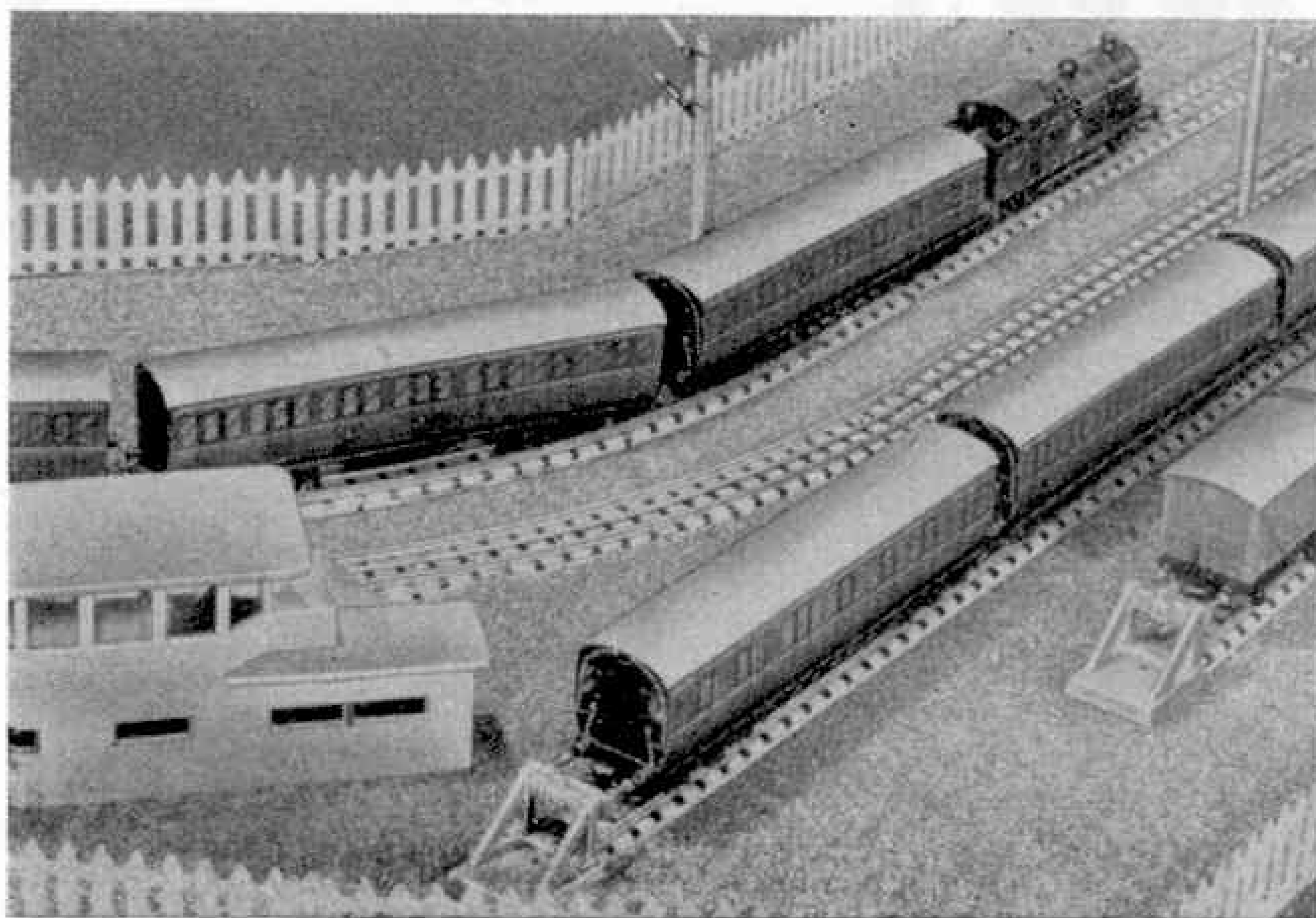
The plan of the line is simple, although there are actually two different levels, and good use has been made of the lineside

scenic features to screen one track from the other. As may be judged by the illustrations the final result is remarkably realistic. The earthworks alongside the line of course remain in place even when the railway is out of use, so that in this

respect this folding-up railway has the advantages of a permanent system. To prepare the countryside a rough wooden framework was first covered with sacking material and this was then coated over with a mixture of plaster, glue and water. This seems a strange combination, but after painting its results are quite good.

Buildings and other items remain in place when the railway is folded up, but the trains themselves have to be packed separately. The rails that bridge the hinged joints in what becomes the baseboard are removed before the box is closed.

A special feature has been made of the various buildings, and as shown in the illustration there is an oil storage depot served by a siding, on which of course Hornby-Dublo Tank Wagons are regularly found.



A corner of a simple Hornby-Dublo railway where fencing gives an effective finish to the lineside.

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Stamp Collectors' Corner

By F. E. Metcalfe

MALAYA

MALAYA is much in the news nowadays, and this may have something to do with the greatly increased popularity of the stamps of the various states that make up the Federation that has been noted recently.



And the new set for Singapore, with all the various types of craft on the stamps to 50c. in it, undoubtedly will increase the appeal, so I would like to discuss these issues.

Oh, I can hear some old collector say, I cannot take up these complicated things. Why, there are all those Japanese overprints—some of them are very costly—with so many forgeries, which are quite beyond my pocket, let alone my philatelic

knowledge, and then there are the rest of the stamps. No, not Malaya for me!

And quite right, too. I would not suggest for a moment that the average collector should take up the whole of the Malayan States, right from the beginning, though if there are any philatelists with a good knowledge of what's what, and not too shallow pockets, I would suggest that no other group of countries could provide more enjoyment. They would not be ploughing a lone furrow either, for quite a lot has been written about these stamps, and they have many followers, particularly in the Far East and the U.S.A., though some of the finest collections are held in Britain.

There is one point I would like to stress for those thinking of taking up all Malayan stamps for the first time. There are many dangerous forged overprints among the stamps overprinted by the Japanese during their occupation of the Malayan Peninsula. Also, do not take too seriously the prices in the catalogues for many of these stamps. They bear little relation to actual selling values, and from time to time collections can be picked up at auction at a tithe of catalogue value. A man told me recently that he picked up a very nice collection in an auction at less than one eighth catalogue. So watch the stamps and watch the prices. Here I am only referring, of course, to the Japanese overprints.

I am not going to bore you with a lot of data about the difference between the stamps of the Malayan Federation and those of the Federated Malay States, for I have always felt this was to all practical purposes a distinction without a difference. Straits Settlements issued its first stamps in 1867. These were the stamps of India overprinted with a crown and various denominations of Straits currency (cents).

Later in the same year the colony got its own stamps, the Queen's head type, and right to the end all its issues merely showed the head of the reigning sovereign. All dull enough in appearance to those who like pictorial stamps, but what with the overprints and other varieties, exciting to a degree to those who like such things.



I hope you will forgive me, but I too like them better than the pictorials. I do admit that the latter have much more general appeal, which is the reason why I am glad that our Commonwealth stamps of to-day have in the main followed the fashion. But I am a teeny bit glad that we still have a few of the head type on issue, such as Leeward Is. and Hong Kong.

I held it at the back of my mind when I started these notes to suggest a simplified collection of Malayan stamps, and now I come to the first set I would include. In 1937 the stamps of Straits Settlements first appeared, with the head of King George VI. There are two dies, and one or two good shades, all listed in the Commonwealth Catalogue. Gibbons list the different dies, but ignore the shades, which is a pity, and I would suggest that the shades are very well worth collecting, for they are not numerous or expensive. Came the war, and many of these stamps were overprinted by the Japanese. These are the stamps that I suggest should be left alone, for the reasons of their expensiveness and the dangerous forgeries, to which I have already referred.

Finally the Japanese were kicked out, and our Military Authorities took over. Apart from Straits stamps, which were in the territory when the Japanese moved in, stocks were held overseas, and these, with any others that could be raked up, were locally overprinted B.M.A. Malaya (British Military Administration). This is the second set I would suggest that collectors might like. They provide something for every type of collector, from beginner to expert. There were many releases, and this resulted in a lot of outstanding shades.

But just take it easy. Perhaps the catalogue descriptions do not quite explain themselves, as to which shade is which, but remember—this applies to all shades in any catalogue—when it is said for instance that such and such a stamp is dark green, or light green, this is in relation to stamps of the same value and issue, and not to other stamps of other sets that may be green. Thus let us suppose that you have a 3c. green of Die 2 of the B.M.A. overprinted stamps. You may not be certain just which shade you have until you see another shade. At once you will then see which is the green and the blue-green through comparing one with the other—the catalogues by the way show you an easy way to distinguish the dies.

Of interest to collectors of this B.M.A. set are the different kinds of paper used. In the Commonwealth Catalogue it will be noted that some stamps are printed on "sub" paper and others on "chalky". Old hands will know all about these varieties, but for those who do not, and I hope that many of these will consider the group of stamps I am reviewing, I should explain that the printers, Messrs. De La Rue Ltd., normally used paper with a chalky surface. This was said to have been for security reasons. If you tried to rub out the cancellation the design would be removed as well. But a much more likely reason is that a better impression could be obtained, for paper with a coated surface has all those tiny



(Continued on page 342)



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For other Stamp Advertisements see also pages 336 and xvi

Stamp Gossip

AUSTRALIAN NOTES

AUSTRALIA can produce beautiful stamps, as can be seen from the illustration of the 1/0½ stamp issued on 9th March. It is rather an odd value, some collectors will think, so I had better explain that the stamp has been issued to cover the cost of a registered letter. I am afraid that the 2/- Olympic Games publicity stamp was not much to look at as far as the design was concerned, but this new stamp more than makes up for that. There is also news that the stamps that are still current, but were issued before Queen Elizabeth came to the throne, are

to be changed in due course. Collectors of "QE" stamps therefore need not include stamps that are really KGVI.

Incidentally, that Olympic Games 2/- stamp was only on sale for about one month, and while used copies can still be picked up at about face value, the stamp may get quite scarce.

LIBERIA

This paragraph is more of a warning than anything else. It is to tell young collectors not to spend good money on mint Liberian stamps while they are current, for it would seem that later on, all these stamps will be cancelled to order and probably sold cheaply. I am not saying don't collect Liberia, for the stamps are so interesting as a rule. But do wait until they go off sale; then you will only spend coppers where you would have spent shillings if you had not bided your time, as our northern countrymen say.

The stamp illustrated actually came off an ordinary letter, so unlike some fancy issues, the stamps are actually on sale in the Liberian Post Office at some time or another. But alas, after a time they get dumped on the market at a fraction of their previous price; hence my word of warning.

FRENCH WEST AFRICA

French colonial stamps are quite popular, though many collectors think that they are overdone, and I am afraid that this is so. Nevertheless, these stamps are generally of great interest, and often of much artistic merit.

The stamp now illustrated belongs to a set that is coming out piecemeal. It shows a native girl who is acting as a telephonist, and an aeroplane can be seen sweeping over the pylons. This is not a scene which we would normally associate with tropical Africa, but in these days of mechanical progress, it is no doubt quite in order.

WHAT TO COLLECT

Some time ago I got a letter from a young collector who mentioned that he likes foreign



stamps—and by that he meant that he didn't like British colonials! He also said that he favoured modern pictorial stamps "with foreign designs". Then he finished up by asking "Can you suggest a country to collect?"

I was thinking of this letter when going through some duplicates that I had washed off pieces of envelope, and when I came across this stamp of Turkey, I thought that this was just the country for our young friend to take up. You could not get designs more foreign than some of those issued by this friendly country.

In passing, if there are any readers who want a special foreign holiday this year, let them think of

Turkey also, for it is a wonderful country to visit. In the spring, can you imagine valleys of wild tulips, or hill sides covered with wild Christmas roses. In my own garden is a fine patch of muscari. The bulbs were gathered around a tree in Turkey while I was waiting for a broken down car to be repaired. Go to Turkey when you will, and you will have the time of your life if you like strange and beautiful sights. The country's stamps are worth collecting too.

COMING EVENTS

Some collectors say they are waiting until all the Queen Elizabeth issues are out, before they start going in for these stamps. Personally I think that they are wrong to wait, if of course they intend ultimately to collect current colonial stamps. Many Queen Elizabeth sets are out already, and new printings of these appear from time to time,

with different shades and perhaps perforations that may render existing stamps obsolete.

Actually there have been a number of new shades already, and it is not so long since the Trinidad and Tobago \$1.20 value appeared in a changed perforation. Now, if you want to buy the obsolete perforation variety you will have to pay several shillings more for a copy than you would have done when the stamp first came out. So you should not delay, just because a few more sets have yet to appear.

Mind, I am only referring to collectors who intend to collect "QE" stamps sometime or other. The Commonwealth stamps of the last reign continue to be as popular as ever, but there are now many who are collecting the issues of to-day.

I wonder if any of you have seen the large stamp issued by Monaco to celebrate this year's Monte Carlo Rally. It is a striking production that will be welcomed by all stamp collectors interested in motor sport.



From Our Readers

This page is reserved for articles from our readers. Contributions not exceeding 500 words in length are invited on any subject of which the writer has special knowledge or experience. These should be written neatly on one side of the paper only, and should be accompanied if possible by original photographs for use as illustrations. Articles published will be paid for. Statements in articles submitted are accepted as being sent in good faith, but the Editor takes no responsibility for their accuracy.

A Famous Russian Cathedral

I was very fortunate in having the opportunity of visiting Moscow last December, when I took the accompanying photograph of the cathedral of St. Basil the Blessed. This is in Red Square. It was built between 1555 and 1560 by Ivan IV to commemorate his conquest of the Khanates of Kazan and Astrakhan, and was designed by the two Russian architects Postnick and Barma.

The cathedral originated from a series of small wooden chapels. The central church was then constructed in stone and the chapels were united with it. Later they were rebuilt in stone. The building is really magnificent. After the seventeenth century, when another small chapel and belfry were added, no more churches were built in such a colourful and extravagant style until the revival of Russian national culture in the nineteenth century. The



The cathedral of St. Basil, in Red Square, Moscow. Photograph by P. J. Van de Kastele, Sherborne.

cathedral is now being restored, as shown in my photograph, and has just been reopened as a museum.

P. J. VAN DE KASTEELE (Sherborne).



A giant clock on a hillside above the banks of the Moselle. Photograph by J. Dinsdale, Burnley.

Clocks in the Vineyards

Last year while touring I travelled along the banks of the River Moselle in Germany. I noticed that at regular intervals giant sundials had been set up on the hillsides overlooking the vineyards. They were obviously there for the convenience of the workers among the vines, and can probably be considered as the equivalent of the factory clocks with which town dwellers are so familiar.

Each dial is visible for many miles, and the one shown in the accompanying photograph is near a little town of the name of Weinberg. In the centre can be seen a large statue of St. Nicholas; or Santa Claus, who many years ago brought food to the people of this region during severe famine, and for this has not been forgotten to this day. Many of the old bridges have a statue of the saint on them

JOHN DINSDALE (Burnley).

Competitions! Open To All Readers

Prize-winning entries in M.M. competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

What is Wrong With This?

MIXED CAR DETAILS

MAKE	MODEL	No. OF CYLINDERS	ENGINE CAPACITY	FUEL TANK CAPACITY	TYRE SIZES
1. Hillman	"Six-ninety"	6	3435 c.c.	7 gall.	6.50/16
2. Morris	"Continental"	6	1172 c.c.	13 gall.	6.00/15
3. Austin	"Sapphire"	6	1489 c.c.	6½ gall.	6.70/15
4. Wolseley	"Conquest"	4	2262 c.c.	18 gall.	5.90/15
5. Armstrong-Siddeley	"Cresta"	4	2088 c.c.	15 gall.	5.00/15
6. Bentley	"Renown"	4	2639 c.c.	14 gall.	4.50/17
7. Daimler	"Oxford"	4	2199 c.c.	12 gall.	5.75/16
8. Triumph	"Hereford"	6	4875 c.c.	11 gall.	5.50/15
9. Vauxhall	"Popular"	4	1265 c.c.	12½ gall.	6.70/16
10. Ford	"Husky"	6	2433 c.c.	16 gall.	5.50/16

THE panel above lists certain technical details about ten current makes of British Cars, but it will be obvious to motor car enthusiasts among our readers that something has gone wrong. In fact, the details have been deliberately—and very thoroughly!—mixed up. Take No. 10 for instance. The name of this Ford model is certainly not "Husky," nor has the car a six-cylinder 2433 c.c. engine; further, the figures given for the petrol tank and the tyres are incorrect.

This mix-up provides an easy and very interesting competition. The right descriptions, number of cylinders, engine and petrol tank capacities, and tyre sizes are there, and what readers are invited to do is to sort out the mess so that the

correct details are given for each of the twelve cars named. The correct list should then be written out carefully, with the competitor's name, address and age given on the back of his entry.

There are two sections in this competition, for Home and Overseas readers respectively, and in each prizes of 21/-, 15/- and 10/6 will be awarded for the best entries in order of merit, with consolation prizes for other good efforts. If there is a tie for any prize the judges will take neatness and novelty into consideration.

Entries should be addressed *June Motor Car Contest, Meccano Magazine, Binns Road, Liverpool 13. Closing dates: Home Section, 30th July; Overseas, 31st October.*

Draw a Railway Scene

For our second contest this month we give readers who are both fond of drawing and keen on railways a chance to show what they can do by sending us a drawing of a railway scene of any kind. The drawing must be their own unaided work, and it can be in pencil or pen and ink, and colour can be used if desired—but bright colours will not compensate for bad drawing, and it is on the merits of the drawing itself that the judges will base their decision.

Each drawing must be the unaided work of the competitor, and his name, address and age must be written on the back of it.

There will be two sections, for Home and Overseas readers respectively, and in each prizes of 21/-, 15/- and 10/6 will be awarded, with consolation prizes for other good efforts.

Entries must be addressed *June Railway Drawing Contest, Meccano Magazine, Binns Road, Liverpool 13. The closing date in the Home Section is 30th July, and in the Overseas Section, 31st October.*

The S.R. "Schools"—(Continued from page 297)

Coast trains. All are now stationed on the Eastern Section, whereon I have logged speeds up to 85 m.p.h., with good hill climbing and acceleration.

Schools ran between London and Eastbourne before the 1935 electrification, and were responsible for most of the fast train working over the difficult Waterloo-Portsmouth route before electric operation began there in 1938. About that time, on the much straighter and more easily graded main tracks to Bournemouth and Salisbury, though with faster schedules, their performances on expresses to or from Waterloo were astonishingly fine and often equalled the best speeds and timings achieved by the two 4-6-0 passenger types with substantial loads. On occasion speeds round about 90 m.p.h. were touched: non-stop runs were made over the 108 miles between London and Bournemouth in 116-18 mins. with 10 or 11 coaches.

Cargo Submarines Under the North Pole—

(Continued from page 301)

submarines which the Germans used to supply their U-boat fleets at sea.

The great strides made in submarine construction since then have brought the day of trans-polar shipping routes much closer. It would be necessary to build harbours along the routes to be taken by the cargo submarines of any new shipping lanes between Europe and Asia via the Arctic. Would this be possible?

The answer is YES. Murmansk, in Arctic Russia, is a major port. So is Igarka, where British ships load timber every autumn after the spectacular voyage through the narrow ice-jammed straits east of Murmansk.

Many miles of the Soviet Union's Arctic shores are swept by pack ice sometimes one hundred feet thick. But there are many bays, inlets and river estuaries where the sea is not grinding with moving floes, but merely topped with a layer of ice. The same applies to the coasts of Alaska, Arctic Canada, Greenland, and Spitzbergen. Given suitable equipment it would be possible for cargo submarines to surface in such havens, and when one considers what the Americans have accomplished in the construction of great air bases in the Arctic there can be little doubt about whether it would be possible to build harbours on the frozen shores of the Far North.

Ten years ago I wrote that air liners would be flying from Europe to the Far East via the Far North by 1955. The very idea of this seemed far fetched then! But it has been fulfilled. B.O.A.C. are planning a new northern route to Tokio as against the present normal one via Bangkok, and Scandinavian Airlines have already pioneered this route with fare-paying passengers. And there are men who think that it will not be many years before this development in world transport is paralleled by one even more spectacular—that of new trade routes through the translucent greens and blues beneath the grinding ice of the Polar Basin.

Model-Building Competition Results—(C. from p. 325)

entered in the Contest, and the judges hesitated for some time before finally deciding that Mr. Henry's model had the edge on it by a slight margin.

Work of almost equal standard is shown in the Third Prize model built by F. S. Rouse, Cheltenham, who also made a very successful attempt to reproduce the details and movements of the actual crane as accurately as possible. He just failed to attain the very high degree of realism of the two models I have already mentioned, however, although the external appearance of the model is really excellent. Mr. Rouse managed to include in the model all the essential mechanical features and it was only in the matter of layout and minor details that the others took the lead. I congratulate all three competitors on their handiwork and trust to see further entries from them in our monthly M.M. competitions.

Two Bells—(Continued from page 310)

The aircraft he now flies, and the XV-3, look strange in an age of super-streamlined, supersonic jets. But they are among the first of a new generation of aeroplanes that should be safer and more versatile than any we know today. We are only at the "Wright brothers stage" of this new era of flight, and Rolls-Royce, Bell and Fairey are the pioneers. The convertiplanes and VTOLs of the future will be as different to the XV-3 and "Flying Bedstead" as the Comet is different to the Wright biplane; and they may well bring true the old dream of safe, cheap, convenient flying for everyone.

New Meccano Model—(Continued from page 327)

Strips 19 to a $3\frac{1}{2}$ " Strip fixed to the end flange of the Flanged Plate 18.

To curved $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates attached to the Flanged Plate 18 bolt Flat Trunnions to form the seats, and for the hinged tailboard use a $2\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plate fitted with two Right Angle Rod and Strip Connectors. Pass the Right Angle Rod and Strip Connectors over a 2" Rod held in a Coupling screwed on a bolt passed through the end flange of Plate 18. Place two Washers on the bolt.

For the sides of the trailer $5\frac{1}{2}$ " \times $2\frac{1}{2}$ " and $4\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flexible Plates edged by $5\frac{1}{2}$ " Strips should be used, and for the ends $3\frac{1}{2}$ " \times $2\frac{1}{2}$ " Flanged Plates. Arrange two $12\frac{1}{2}$ " Angle Girders 20 to form a channel girder and bolt them to $3\frac{1}{2}$ " \times $\frac{1}{2}$ " Double Angle Strips fixed between the sides. Make the floor from six $5\frac{1}{2}$ " \times $1\frac{1}{2}$ " Flexible Plates.

A 4" and a $1\frac{1}{2}$ " Rod joined by a Rod Connector are used to form the wheel axle, and the wheels must be free to turn on it. Support the axle in Semi-Circular Plates bolted to the sides, and fix the wheels on it by means of $\frac{3}{4}$ " Flanged Wheels.

Now arrange a $5\frac{1}{2}$ " Strip so that it overhangs the front ends of the Girders 20 by one clear hole. Fix a Threaded Pin in this Strip and use it to couple the trailer to the Land Rover.

The parts you will require to build the Land Rover and Trailer are as follows: 17 of No. 2; 6 of No. 3; 2 of No. 4; 12 of No. 5; 4 of No. 6a; 4 of No. 8; 10 of No. 10; 3 of No. 11; 18 of No. 12; 4 of No. 12a; 1 of No. 12c; 1 of No. 15a; 1 of No. 15b; 2 of No. 16; 2 of No. 17; 4 of No. 18a; 1 of No. 18b; 2 of No. 19b; 2 of No. 20b; 2 of No. 22; 1 of No. 23a; 1 of No. 24; 2 of No. 24a; 2 of No. 26; 1 of No. 27a; 1 of No. 32; 171 of No. 37a; 160 of No. 37b; 27 of No. 38; 2 of No. 38d; 1 of No. 46; 2 of No. 48; 9 of No. 48a; 2 of No. 48b; 1 of No. 51; 1 of No. 52; 2 of No. 53; 6 of No. 59; 2 of No. 62; 1 of No. 63; 1 of No. 80c; 1 of No. 90; 8 of No. 90a; 2 of No. 111; 1 of No. 111a; 3 of No. 111c; 2 of No. 115; 1 of No. 116; 4 of No. 125; 2 of No. 126; 4 of No. 126a; 1 of No. 147b; 1 of No. 155; 1 of No. 176; 1 of No. 186b; 4 of No. 187; 6 of No. 188; 6 of No. 189; 6 of No. 190; 2 of No. 191; 4 of No. 192; 2 of No. 199; 2 of No. 200; 2 of No. 212; 2 of No. 212a; 1 of No. 213; 2 of No. 214; 4 of No. 215; 4 of No. 221; 2 of No. 222; 2 of No. 223; 1 No. 1 Clockwork Motor.

Stamp Collectors' Corner—(Continued from page 337)

hollows filled in, so that we get the clearer print.

Through the war it was apparently not easy to get the coated paper, so uncoated paper was used, which makes an interesting variety for collectors. And how can one tell the difference, I will be asked. Easily! Get something made of silver, an old coin for instance—those issued during the past few years contain little or no silver and will not do—and rub it over the paper. It will leave a mark as though an ordinary lead pencil has been used if the paper is chalky, but if the paper is "sub," or substitute to give it its full title, then no mark will be left. Only make a small line of course; this can be removed by a piece of ordinary rubber. Stamp dealers sell a little pencil for the job. This is quite inexpensive, about 1/6, and is tipped with pure silver.

Fireside Fun

Woman: "Doctor, I do wish you'd see my husband—he blows smoke rings through his nose."

Doctor: "I see nothing wrong with that—many smokers do it."

Woman: "But my husband doesn't smoke!"

Lady (in photographer's shop): "I want this picture of my son enlarged."

Photographer: "Certainly, do you want it mounted?"

Lady: "Oh yes, please. He'll look lovely on a horse!"

"Susie, this salad tastes terrible. Are you sure you washed the lettuce carefully?"

"Oh yes, mother! I even used soap."

Tom: "That's a jolly good joke. Why don't you send it to the *Meccano Magazine*?"

Dick: "No can do."

Tom: "Why not?"

Dick: "That's where I saw it."

Inquisitive Lady: "How were you wounded, my good man?"

Soldier: "By a shell, lady."

Lady: "Did it explode?"

Soldier: "Naw, it crept up close and bit me."

"Johnny," the teacher commanded, "spell 'weather'."

"W-e-t-h-u-r," responded the pupil.

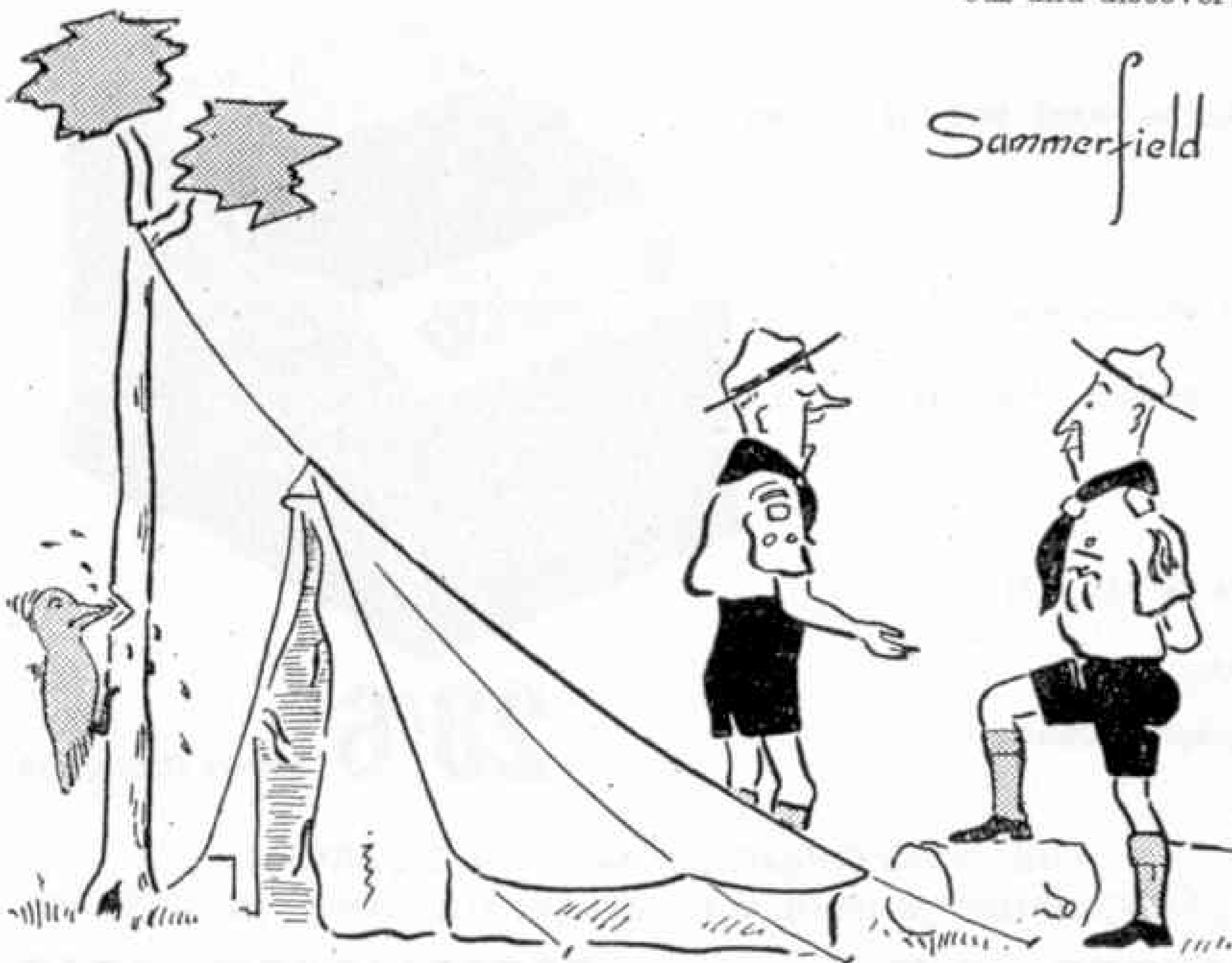
The teacher listened, grimaced and then commented, "Well, that's the worst spell of weather we've had in a long time."

Manager: "You can start on Monday, and I hope you will come to work with a will."

New employee: "Gosh! will my job be as dangerous as all that?"

Counsel: "Are you sure that the prisoner is the man who stole your car?"

Witness: "Well, I was until you cross-examined me. Now I'm not sure whether I ever had a car at all."



"... and the great thing of course, is that the tent pole simply cannot fall down!"

It was 3 a.m. and the telephone rang. He climbed from his warm bed to answer it.

"Hello," said a voice from the other end. "are you the fellow that manufactures electric alarm clocks?"

"Yes."

"Well, I've called you up to tell you that you make wonderful clocks, except for one little detail. They are beautiful, quiet and keep wonderful time."

"Thank you," said the clock manufacturer, "but why call me up at 3 a.m. to tell me about it?"

"Because I set the thing for 8 a.m. and it rang at three!"

2nd Mate (joining new ship): "What sort of a chap is the Old Man. Has he had much experience?"

1st Mate: "Experience! Why he was a skipper before the Dead Sea fell ill."

THIS MONTH'S BRAIN TEASERS

IMPRISONED SOLDIERS

Twenty prisoners of war were confined in a fortress containing 20 cells as shown in the sketch. Four of the men were British, four French, four Greek, four Spanish and four Italian. They were so placed that none of the prisoners had one of his own countrymen in an adjoining cell. How was this done?

1				
2	3	4	5	6
7	8	9	10	
11	12	13	14	
15	16	17	18	19
				20

GEOGRAPHICAL QUIZ

Can you think of a well-known geographical feature, the name of which contains 11 letters, made up of only four different kinds?

RADIO PERSONALITIES

Each of the following groups of letters spells the surname of a well-known radio or T.V. personality, but the letters are jumbled. Can you sort them out and discover the names? WESDARD, NCSOKJA, GARIHND, DOWMSI, MBBIELYD, NWSARED, NIBNOSOR, AGHNAVCA.

Sammerfield

ANSWERS TO LAST MONTH'S PUZZLES

A Game with Coins

You should start with coin No. 9 and jump over 4, 5, 7 and 1. Then go to 3 and jump over 2. Now take 6 and jump over 8 and 3. Finally jump 9 over 6.

Holiday Towns

Jack went to Sevenoaks
Peter " " Torquay
Michael " " Hull
James " " Swansea
John " " Pearehaven
David " " Newquay

What was the Date?

There are several possible solutions to this problem, spread over the centuries, but the date we had in mind is 1881. Did you discover this, or any others that would meet the case?

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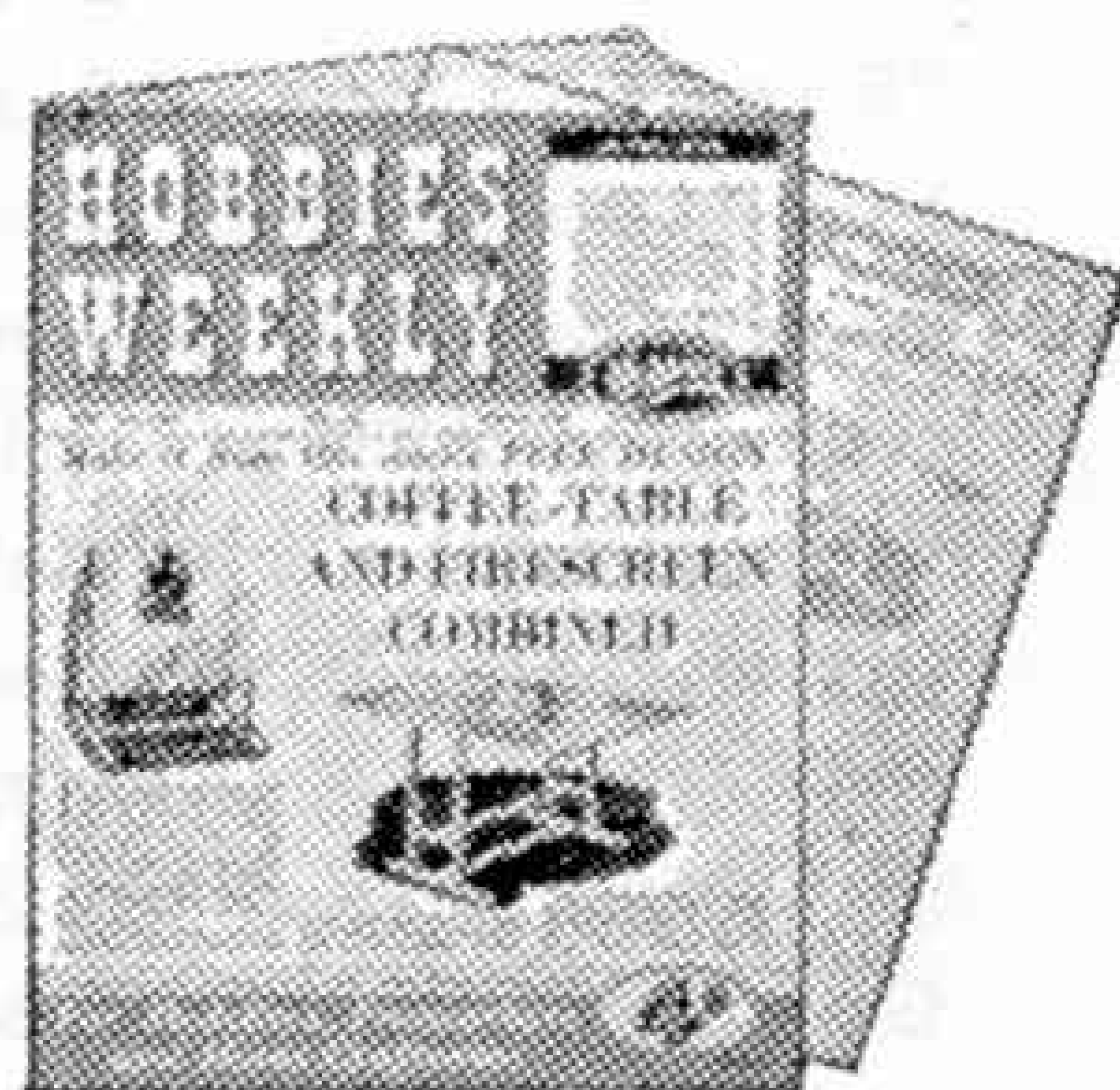
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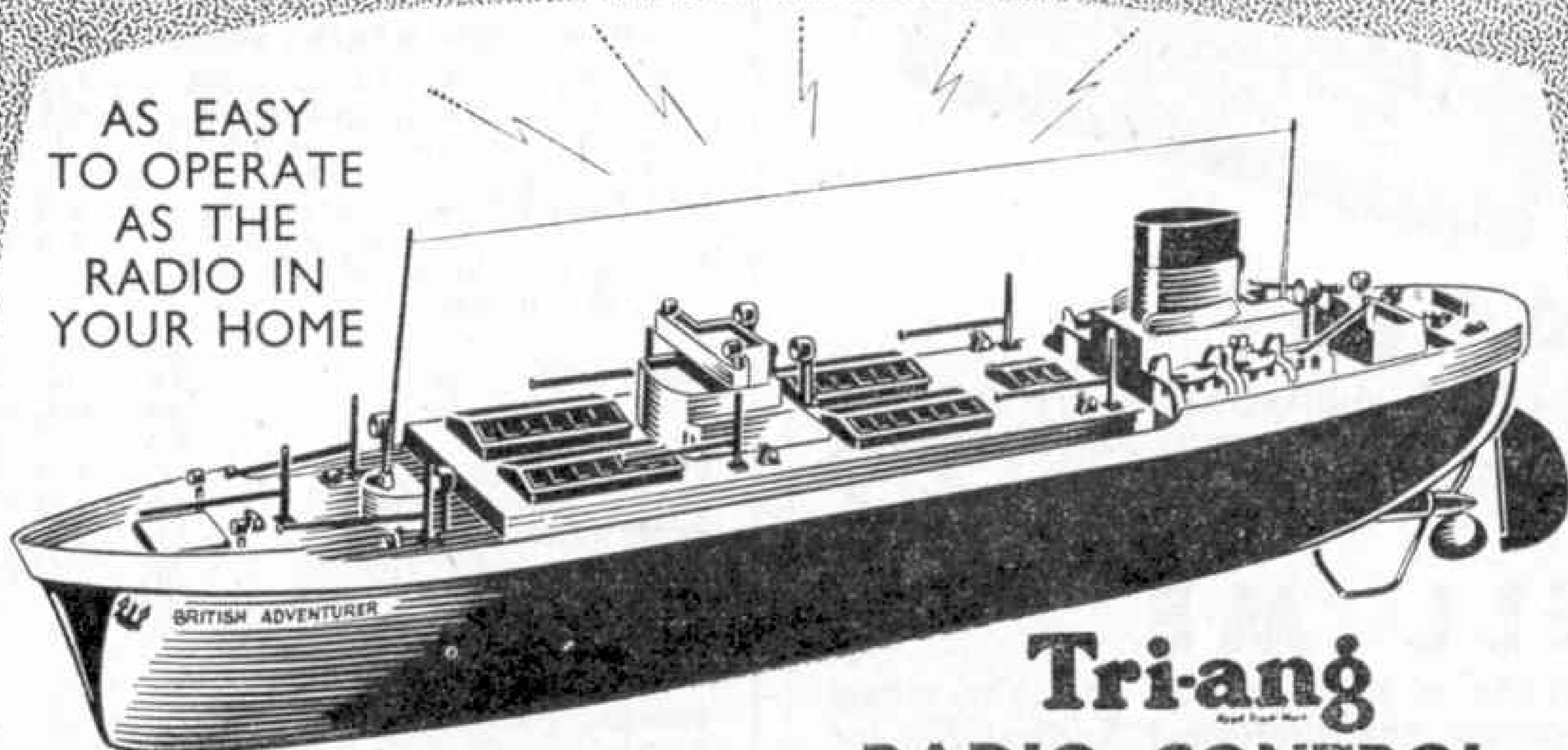
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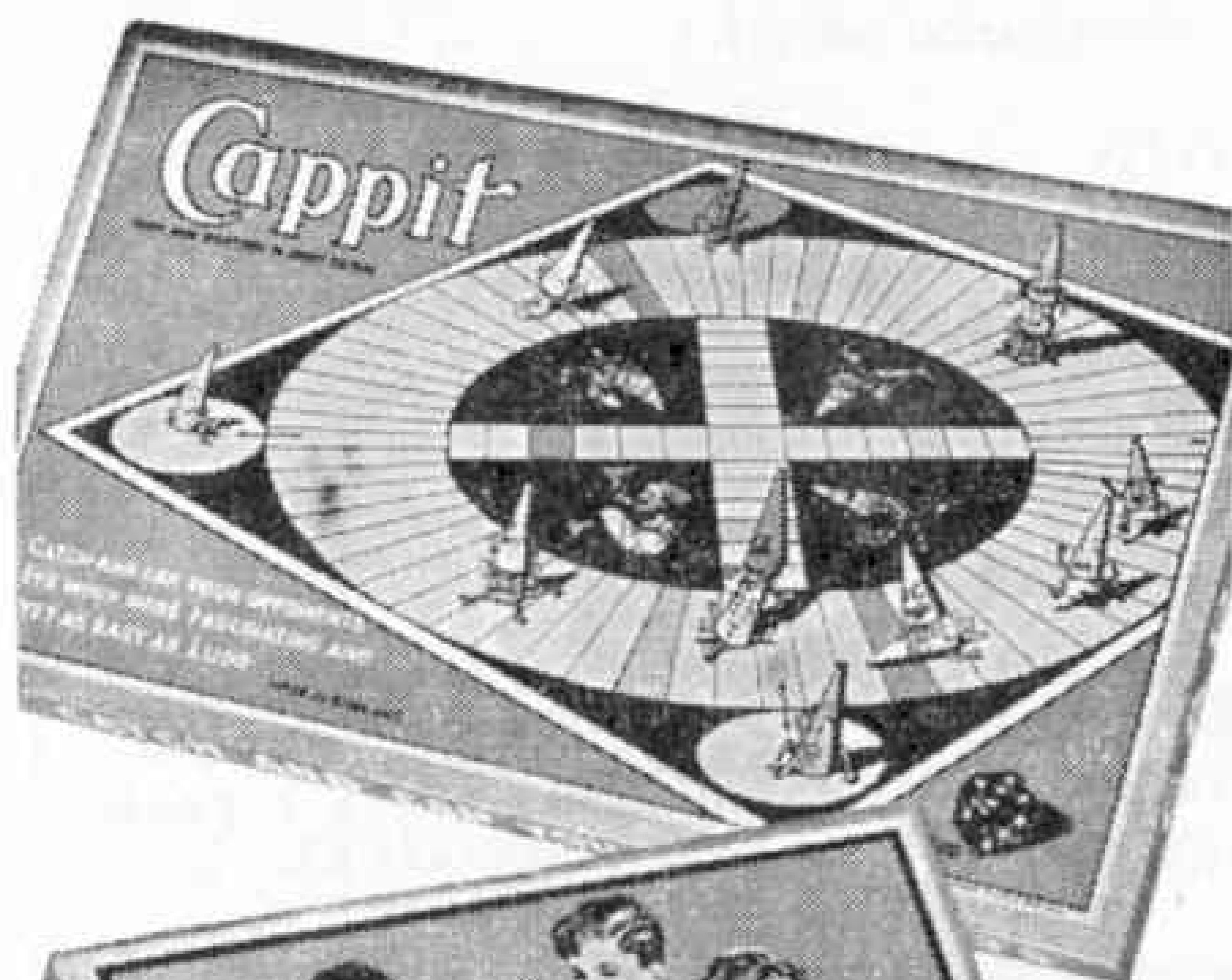
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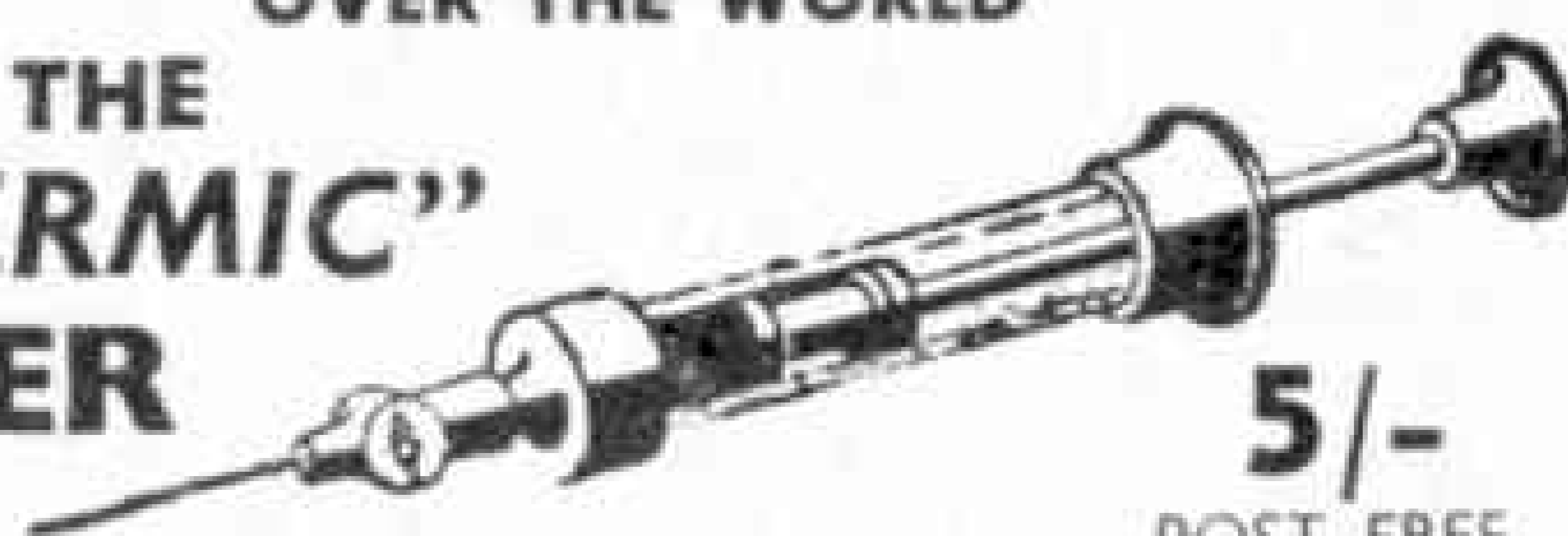
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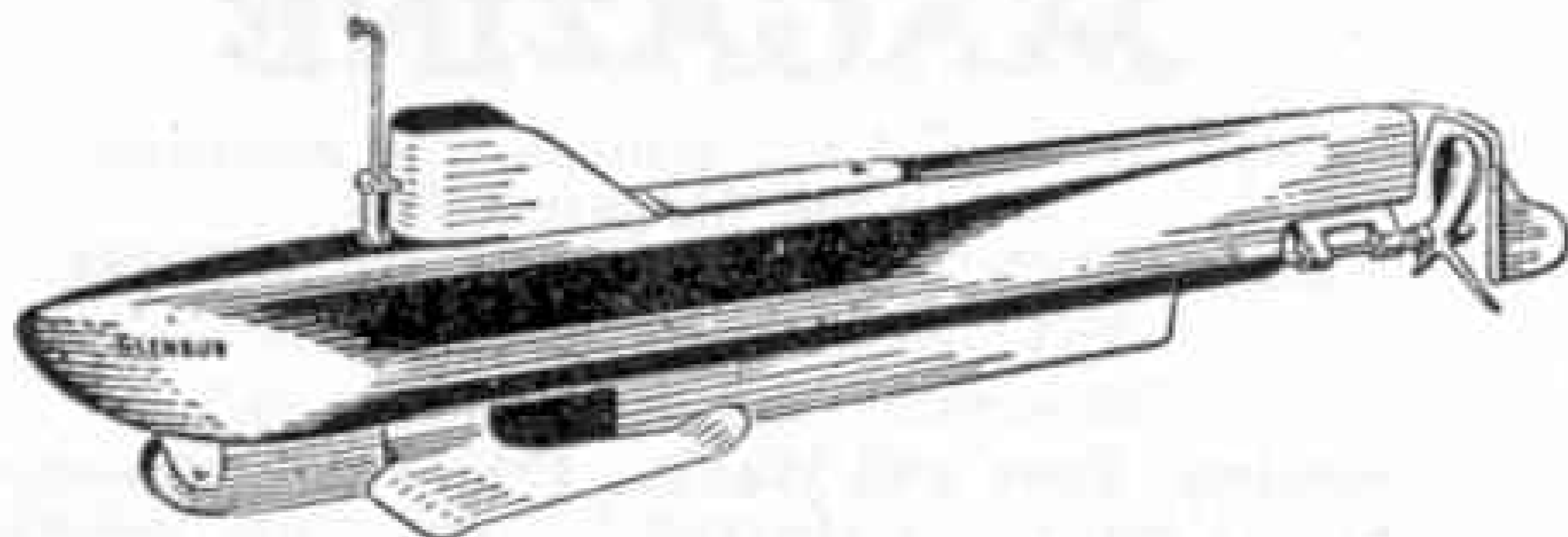
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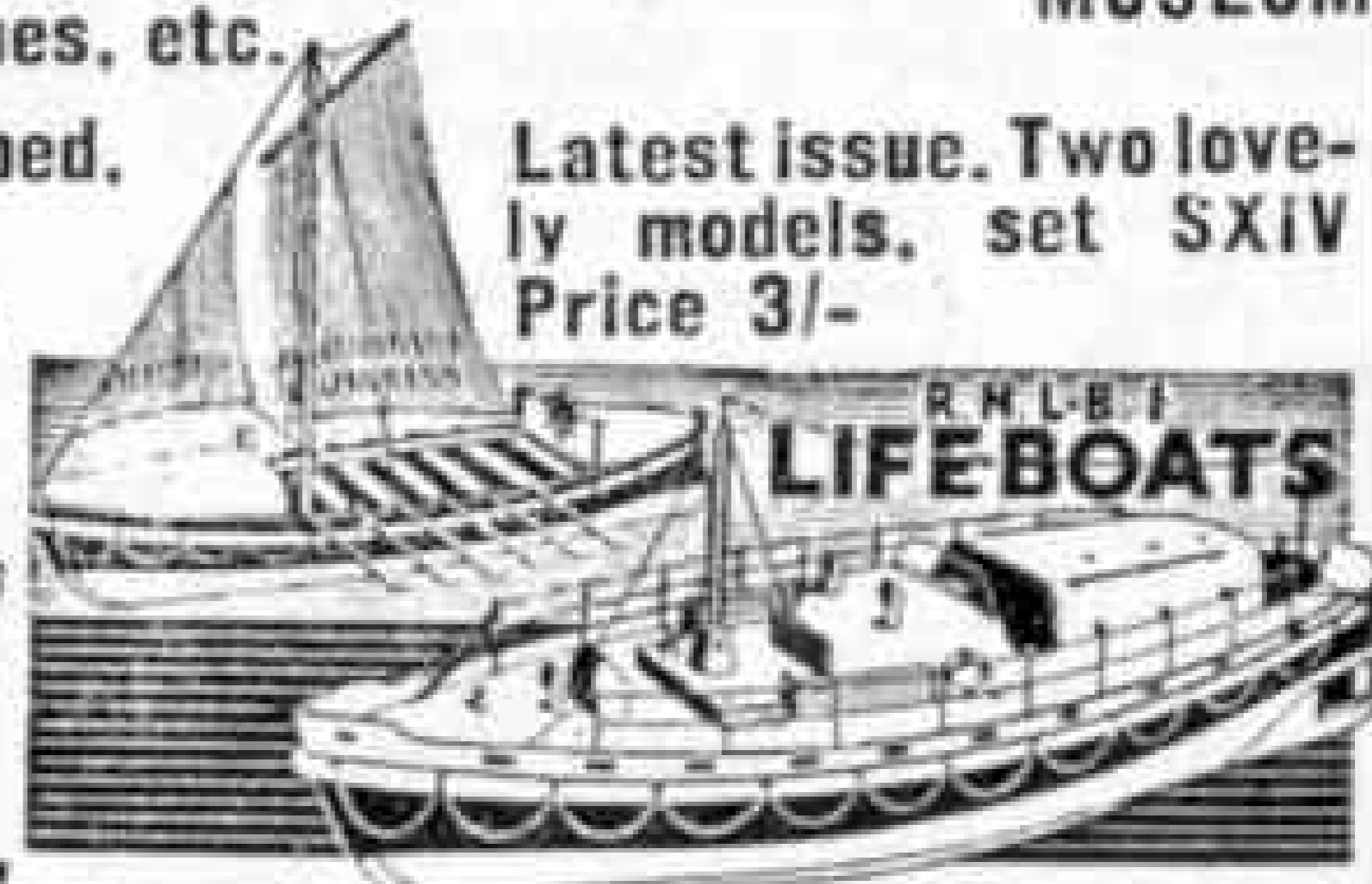
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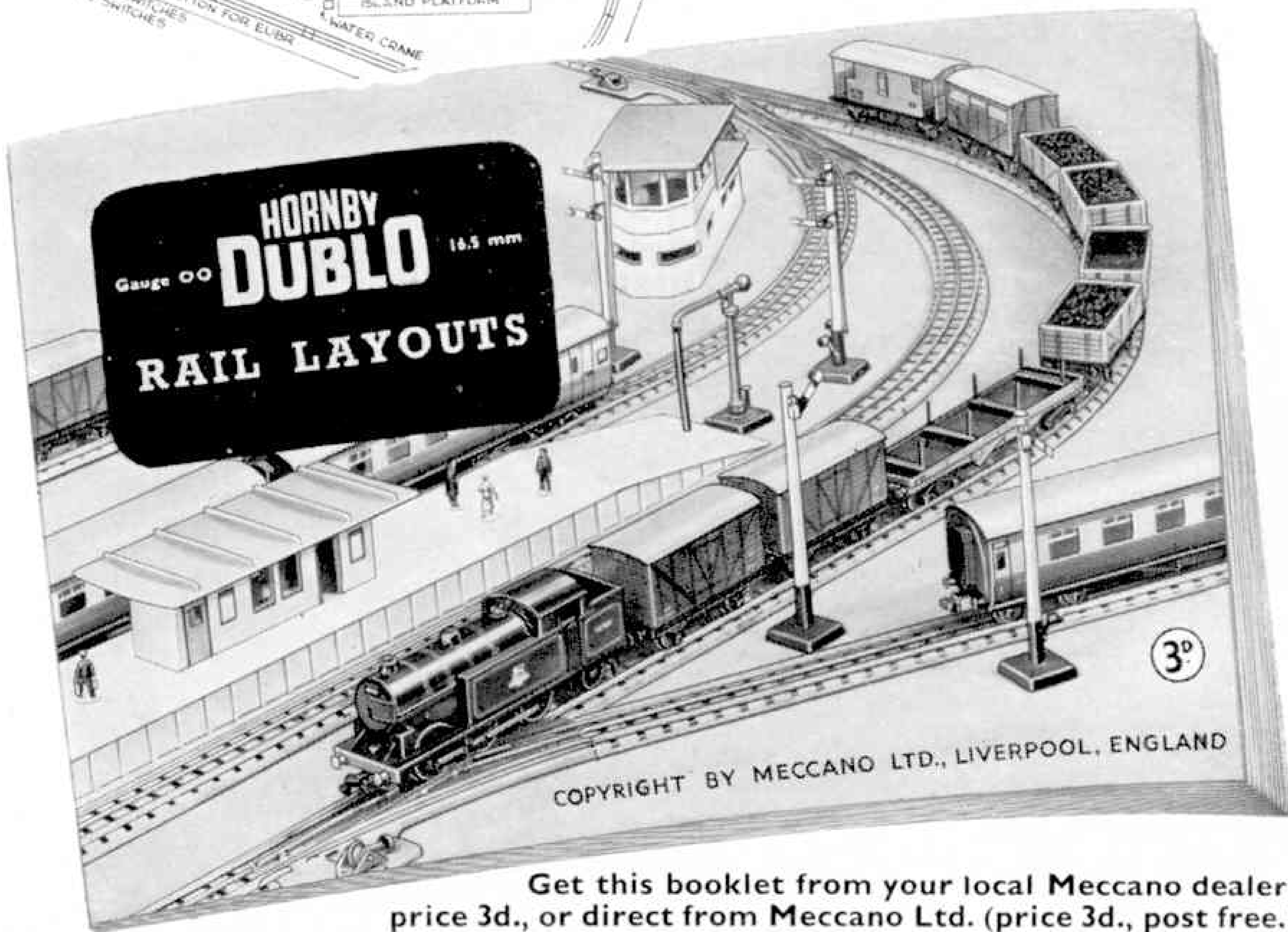
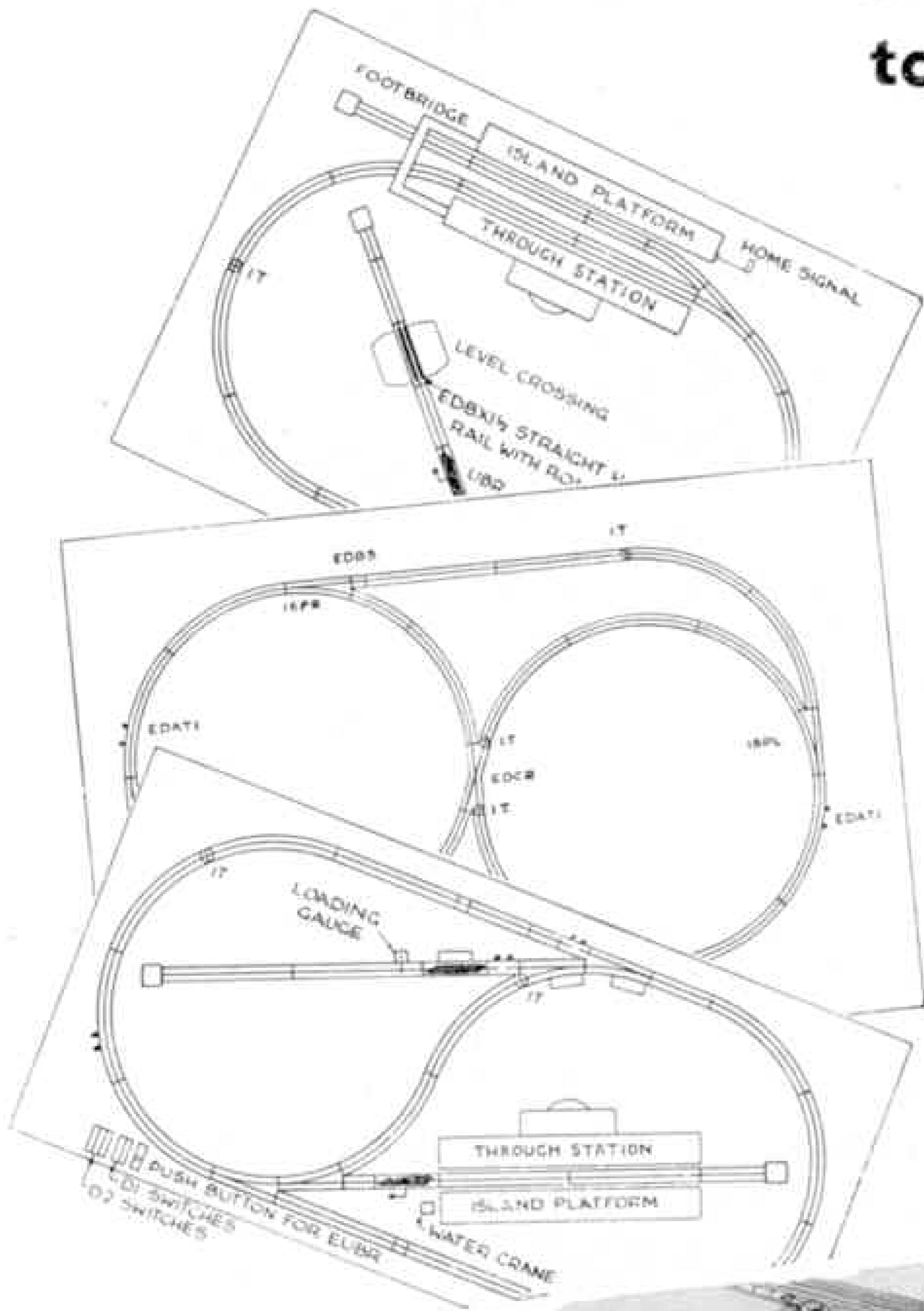
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